OUT OF PRINT

# 4

# N.A.A. BULLETIN

*November 1960*

*In Two Sections*
*Section 1*

## Exploring—

## Profit Planning

## Budgeting

NATIONAL ASSOCIATION
OF ACCOUNTANTS
LIBRARY

## Case Studies—Special Aspects

# N.A.A. BULLETIN

Vol. XLII No. 3 NOVEMBER, 1960

## Contents

Page

*Laying the Foundation*

**ORGANIZING A FORECAST AND BUDGET PROGRAM — BASIC CONSIDERATIONS** by ROBERT F. McMAHON

Different programs may prove equally good or bad, depending upon their compliance with particular requirements, but, whether organized one way or another, the groundwork has to be done thoroughly and checked minutely, as a seemingly minor slip may later turn into a major obstacle. Main points of such a general layout are set forth in this article ..... 41

*When Activity Changes*

**PROFIT AND LOSS BUDGET BY VOLUME**

by FELIX E. BARIDON

Pre-determined results established through the profit and loss budgets for various levels of activity make for better understanding of the effect of volume on the price structure and profit and, as the present author sets forth, may also serve as a guide both as to the cause of deviations and as to potentials of the business ..... 83

*On the Pricing Front*

**THE USE OF THE PRODUCT PROFIT AND LOSS BUDGET FOR MARGINAL SALES DECISIONS** by H. K. VANCAMP

In this hypothetical case study the author develops budgetary means of supplying the information on marginal sales by incorporating the marginal business into the various reports, thus showing its overall effect ..... 5

This *Bulletin* is published monthly by the National Association of Accountants, 505 Park Ave., New York 22, N. Y. Subscription price $10 per year, for members only. Second class postage paid at New York, N. Y.

COPYRIGHT 1960 BY THE NATIONAL ASSOCIATION OF ACCOUNTANTS
(Founded in 1919 as the National Association of Cost Accountants)

*Comprehensive System*

A CASE STUDY IN BUDGETARY PLANNING AND CONTROL by CARL D. CRANKSHAW

Described here is a system tailored to allow for maximum decentralization and yet highlight all the major features to top management. Designed to overcome limitations imposed by frequent volume fluctuations, a continuous flow of selected information is coordinated into a workable control mechanism ..... 53

*Service to Supervision*

ASSISTING THE FOREMAN THROUGH MANUFACTURING BUDGET by A. A. COX

Serving as manufacturing budget and reflecting the departmental performance, the set of reports presented by the author has been used by his company both as a means of creating better understanding of the system by those who incur most expenses and a source of information designed to assist foremen in determining the basic factors affecting the efficiency of departmental operations ..... 63

*Versatile Experiment*

MACHINE ACCOUNTING TABULATIONS FOR BUDGETARY PLANNING by JOSEPH M. PALECEK

Such a practical approach to the problem of forecasting sales and cost of sales through the use of machine accounting equipment, as in this program developed by a multiplant industrial company, may also be extended and, as the author points out, information derived from tabulating cards used for a variety of tabulations to facilitate budgetary control ..... 75

*Communication Both Ways*

DEVELOPING THE PROFIT PLANNING PROCEDURE by CHARLES P. VOLLER

The emphasis is on the problem of communication both to ensure participation in planning and to channel the feedback information into the next planning cycle. In the present author's opinion, the use of the well designed means of communication, as outlined in the article, also simplifies the work involved ..... 31

*Unintended Effects*

PROFIT FLUCTUATIONS CAUSED BY STANDARD COST VARIANCES by CHARLES M. REINHERR

Discusses possible side effects of standard cost adjustments adversely affecting the profit picture. These concern the turnover of finished goods inventory reflecting previous standards. The author discloses profit fluctuations that can be anticipated ..... 23

*Not to Be Slighted*

VARIANCE ANALYSIS IN PROFIT PLANNING by C. RUSSELL CLAUSEN

As clearly demonstrated in this case study, even a simple variance analysis yields valuable findings when based on profit-minded planning and control ..... 17

## — Why and Whether —

Why Be Without Budgetary Control? by CARL J. LARSON 92

Increase in Volume to Offset Price Reduction—A Comment by GERALD CROWNINGSHIELD 90

BEYOND THESE COVERS ..... 94

# *The Use of the Product Profit and Loss Budget for Marginal Sales Decisions*

by H. K. VANCAMP

THE QUESTION of maintaining a minimum gross profit percentage or cutting prices to secure a greater volume of sales faces the executive every day. The executive knows that he is treading on dangerous ground, and asks that accounting furnish information upon which he can make his decision.

The majority of the writing touching on this subject is concerned with the development of a historical product profit and loss statement. The use of budgeting for control purposes and the inclusion of marginal sales in these budgets is almost completely overlooked. This paper will develop the use of a budgeted profit and loss in supplying the information necessary for the executive to make the decision regarding individual product lines. The following case is a hypothetical case and is not intended to display actual operations of any company but is used as a means by which the problem of budgets and marginal sales may be explained.

The Allen Office Furniture and Equipment Company is a wholesale distributor of office fixtures, furniture, books, printed forms and allied products. This company has salesmen who cover the entire state of Ohio. They are headquartered in Akron, Ohio, where the company also maintains a central warehouse with additional warehouses in Youngstown, Columbus, Cincinnati and Toledo, Ohio. Deliveries are made from these warehouses by company trucks.

For several years the company has developed a fixed budget by product. This budget has been made from the information contained in the regular sales and expense budget. Exhibit 1 displays the budgeted profit and loss for the calendar year 1959 as released by the budget department.

## *The Problem*

A problem that management has under consideration is whether to add business which, with respect to gross profit, is of marginal nature. The company dealers have been bidding on office furniture for the new schools and have sold some furniture but, as a whole, have not been successful bidders because the prices were not competitive. The dealers have also complained that the company

---

**H. K. VANCAMP**, Akron Chapter, 1955, is an Internal Auditor at the Firestone Tire & Rubber Company, Akron, Ohio. A graduate of West Virginia University, Mr. Vancamp is currently working on his master degree at the University of Akron.

## Budgeted Profit and Loss by Product

| | Furniture and Fixtures | Library Books | Office Machines | Office Supplies | Total |
|---|---|---|---|---|---|
| Net Sales | $ 8,800,000 | $ 600,000 | $ 400,000 | $ 2,000,000 | $11,800,000 |
| Cost of Sales | 7,096,000 | 504,000 | 280,000 | 1,560,000 | 9,440,000 |
| Gross Profit | $ 1,704,000 | $ 96,000 | $ 120,000 | $ 440,000 | $ 2,360,000 |
| % to Sales | 19.4% | 16.0% | 30.0% | 22.0% | 20.0% |
| Variable Expenses | | | | | |
| Delivery Expense | $ 442,000 | $ 6,000 | $ 12,000 | $ 40,000 | $ 500,000 |
| Warehouse Expense | 412,000 | 12,000 | 24,000 | 60,000 | 508,000 |
| Selling Expense | 144,000 | 21,000 | 7,000 | 28,000 | 200,000 |
| Advertising Expense | 4,000 | -- | 10,000 | -- | 14,000 |
| Accounts Receivable, Invoicing, etc. | 22,900 | 31,200 | 1,000 | 104,900 | 160,000 |
| Interest Expense | 8,000 | 1,000 | 1,000 | 2,000 | 12,000 |
| Total Variable Expenses | $ 1,032,900 | $ 61,200 | $ 55,000 | $ 244,900 | $ 1,394,000 |
| Merchandise Margin | $ 671,100 | $ 34,800 | $ 65,000 | $ 195,100 | $ 966,000 |
| % to Sales | 7.6% | 5.8% | 16.3% | 9.8% | 8.2% |
| Fixed Expenses | | | | | |
| Warehouse Expense | $ 97,000 | $ 4,000 | $ 6,000 | $ 13,000 | $ 120,000 |
| Selling Expense | 74,000 | 5,000 | 3,000 | 18,000 | 100,000 |
| Credit Expense | 30,000 | 2,000 | 1,000 | 7,000 | 40,000 |
| Cashier | 8,000 | 1,000 | 1,000 | 2,000 | 12,000 |
| Buying Expense | 17,000 | 1,000 | 1,000 | 5,000 | 24,000 |
| Accounts Payable | 13,000 | 1,000 | 1,000 | 3,000 | 18,000 |
| Administrative Expense | 132,000 | 9,000 | 6,000 | 33,000 | 180,000 |
| Total Fixed Expenses | $ 373,000 | $ 23,000 | $ 19,000 | $ 79,000 | $ 494,000 |
| Net Profit Before Income Tax | $ 298,100 | $ 11,800 | $ 46,000 | $ 116,100 | $ 472,000 |
| % to Sales | 3.4% | 2.0% | 11.5% | 5.8% | 4.0% |

**EXHIBIT 1**

does not carry a line of school desks and the dealers are therefore unable to bid on this large volume item.

A survey of the various manufacturers of school desks revealed one manufacturer for whom the company could be the sole distributor for the territory consisting of the State of Ohio. This manufacturer's product is of high quality and will meet all the standards of school requirements.

In management's investigation of the competitive situation, it was found that a gross profit of about 12 percent could be realized on the sale of school desks. The analysis revealed that, in order for the dealers to be competitive, the prices of the regular furniture and fixtures line would have to be reduced so that they would realize a gross profit of only 12 percent.

A comparison of the estimates of business now being sold to the dealers for resale to schools and the estimated increased volume of sales at reduced gross profit is shown on Exhibit 2.

The board of directors has given this problem some preliminary thought and has turned the data on market conditions over to the controller with the following question: "If we take on the proposed new line and reduce our gross profit on furniture and fixtures now being sold to our dealers and resold by them to schools, what will be the effect on our profit?"

| Class of products | Present sales | Increased sales |
|---|---|---|
| Furniture and fixtures | $100,000 | $150,000 to $200,000 |
| School desks | -0- | $400,000 to $800,000 |
| Total | $100,000 | $550,000 to $1,000,000 |

**EXHIBIT 2**

### *Methods of Presentation*

The effect of the reduced gross profit on part of the present business must also be taken into consideration as well as computing the estimated profit contribution of the new business. Determining the profit that will be realized from this new venture and incorporating the marginal business into the various reports may be done simultaneously, since the profit will be determined by comparing the two budgets. Basically there are two approaches to the whole problem: net profit approach and contribution of margin approach.

The net profit approach distributes both variable and fixed expenses to all products. This approach has merit when the statements are to be used by top management to compare the net profit of one product against another and thus have a basis for making decisions as on which lines to increase or decrease sales and advertising effort in order to maximize the profit. However, this method has certain serious drawbacks. First, fixed charges, such as administrative expense, must by their nature be allocated by some arbitrary method, so they are open to attack from sales managers, and management in general, because there is no proven relationship between the services rendered and the expense allocated. Second, a sales manager will take the attitude that he should never take short-margin business because, if he does, he will at the same time be charged with more of the fixed expenses, thus decreasing his overall percentage of net profit to sales. Many times this attitude will defeat the very purpose for which the analysis is intended.

The contribution of margin approach consists of giving consideration only to the gross profit versus the variable expenses which will be incurred if new business is added, or eliminated, if certain products are discontinued. This type

of analysis is especially useful where special problems are involved such as in our case. However, here again, there are shortcomings concerning its overall feasibility, especially for use by top-level management in making long-range plans and in comparing one segment of the business against another, one class of customer against another or one product against another.

Since each of them has its advantages, we will combine both approaches in our study. This will be accomplished by displaying a profit after variable expenses entitled "merchandise margin" and showing also the net profit before income tax.

A third category, that of semi-variable expenses, can also be worked into the budget. We will insert them in the statement and compute a profit after this category also. The reason for such a classification will be explained at a later point in this paper, when the individual expenses are being considered.

Even though expenses are controlled at functional levels in the regular budget, this does not provide the information necessary for management to make decisions regarding product lines. This is not meant to suggest that the present budget control system should be discarded but that the budgeted profit and loss should be added to it as a tool in the budgeting and control procedures. All the figures needed are contained in the formal budget of distribution expenses; therefore, it is simply a matter of rearranging and allocating the figures that have been accumulated.

In our case we shall use the fixed budget for the normal business and add to it a variable budget for the estimated volume of marginal business. This, however, does not answer our problem completely because it is estimated that $100,000 of our present business will have to be sold at a reduced gross profit. In order to properly display the true situation, we shall develop the budget not only as a combination of the fixed budget and the variable budget but also with a separate budget within the budget for the normal business on which the gross profit has been reduced.

Exhibits 3 and 4, respectively, are revisions of the budget shown in Exhibit 1 if management decides to merchandise the marginal business. Exhibit 3 is calculated at an additional volume of $150,000 for furniture and fixtures and $400,000 for school desks. Exhibit 4 is calculated at an additional volume of $200,000 for furniture and fixtures and $800,000 for school desks. These volumes represent the lower and the top limit as estimated in our example. With these two budgets, management is able to determine the results at the various levels of activity between the two extremes. In actual practice a budget would be compiled also at one or more levels between these two volumes of sales but for purposes of illustration the two displays will suffice.

EXHIBIT 3

## Revised Budget Profit and Loss by Product
### (Including Additional Marginal Sales at a Volume of $ 550,000)

| | Library Books | Office Machines | Office Supplies | Furniture and Fixtures: Regular Dealer Business | Furniture and Fixtures: Present Business Priced at 12% Gross | Furniture and Fixtures: Additional Business at 12% Gross | Furniture and Fixtures: Total | School Desks | Total |
|---|---|---|---|---|---|---|---|---|---|
| Net Sales | $ 600,000 | $ 400,000 | $ 2,000,000 | $ 8,700,000 | $ 91,700 | $ 150,000 | $ 8,941,700 | $ 400,000 | $12,341,700 |
| Cost of Sales | 504,000 | 280,000 | 1,560,000 | 7,015,300 | 80,700 | 132,000 | 7,228,000 | 352,000 | 9,924,000 |
| Gross Profit | $ 96,000 | $ 120,000 | $ 440,000 | $1,684,700 | $ 11,000 | $ 18,000 | $ 1,713,700 | $ 48,000 | $ 2,417,700 |
| % to Sales | 16.0% | 30.0% | 22.0% | 19.4% | 12.0% | 12.0% | 19.2% | 12.0% | 19.6% |
| Variable Expenses | | | | | | | | | |
| Delivery Expense | $ 6,000 | $ 12,000 | $ 40,000 | 437,000 | $ 5,000 | $ 7,500 | $ 449,500 | $ 20,000 | $ 527,500 |
| Selling Expense | 11,000 | 7,000 | 38,000 | 142,100 | 1,900 | 3,000 | 147,000 | 8,000 | 211,000 |
| Accounts Receivable, Invoicing, etc., | 31,200 | 1,000 | 104,900 | 22,600 | 300 | 400 | 23,300 | 1,100 | 161,500 |
| Total Variable Expenses | $ 48,200 | $ 20,000 | $ 182,900 | $ 601,700 | $ 7,200 | $ 10,900 | $ 619,800 | $ 29,100 | $ 900,000 |
| Merchandise Margin before Semi-variable Expenses | $ 47,800 | $ 100,000 | $ 257,100 | $1,083,000 | $ 3,800 | $ 7,100 | $ 1,093,900 | $ 18,900 | $ 1,517,700 |
| % to Sales | 8.0% | 25.0% | 12.9% | 12.4% | 4.1% | 4.7% | 12.2% | 4.7% | 12.3% |
| Semi-Variable Expenses | | | | | | | | | |
| Warehouse Expenses | $ 12,000 | $ 24,000 | $ 60,000 | $ 407,300 | $ 4,700 | $ 7,000 | $ 419,000 | $ 1,900 | $ 516,900 |
| Advertising Expense | -- | 10,000 | -- | 4,000 | -- | -- | 4,000 | -- | 14,000 |
| Interest Expense | 1,000 | 1,000 | 2,000 | 7,900 | 100 | 4,500 | 12,500 | 12,000 | 28,500 |
| Total Semi-Variable Expenses | $ 13,000 | $ 35,000 | $ 62,000 | $ 419,200 | $ 4,800 | $ 11,500 | $ 435,500 | $ 13,900 | $ 559,400 |
| Merchandise Margin after Semi-variable Expenses | $ 34,800 | $ 65,000 | $ 195,100 | $ 663,800 | $ (1,000) | $ (4,400) | $ 658,400 | $ 5,000 | $ 958,300 |
| % to Sales | 5.8% | 16.3% | 9.8% | 7.6% | (1.1%) | (2.9%) | 7.4% | 1.3% | 7.8% |
| Fixed Expenses | | | | | | | | | |
| Warehouse Expense | $ 3,100 | $ 5,100 | $ 12,700 | $ 92,200 | $ 1,100 | $ 1,600 | $ 94,900 | $ 4,200 | $ 120,000 |
| Selling Expense | 5,000 | 3,000 | 16,000 | 71,000 | 1,000 | 1,000 | 73,000 | 3,000 | 100,000 |
| Credit Expense | 1,900 | 1,300 | 6,500 | 28,300 | 300 | 400 | 29,000 | 1,300 | 40,000 |
| Cashier Expense | 500 | 400 | 1,900 | 8,600 | 100 | 100 | 8,800 | 400 | 12,000 |
| Buying Expense | 1,200 | 600 | 3,800 | 17,000 | 200 | 300 | 17,500 | 900 | 24,000 |
| Accounts Payable Expense | 900 | 500 | 2,900 | 12,700 | 100 | 200 | 13,000 | 700 | 18,000 |
| Administrative Expense | 8,600 | 5,800 | 29,100 | 127,000 | 1,500 | 2,200 | 130,700 | 5,800 | 180,000 |
| Total Fixed Expenses | $ 21,200 | $ 16,700 | $ 72,900 | $ 356,800 | $ 4,300 | $ 5,800 | $ 366,900 | $ 16,300 | $ 496,000 |
| Net Profit before Income Tax | $ 13,600 | $ 48,300 | $ 122,200 | $ 307,000 | $ (5,300) | $ (10,200) | $ 291,500 | $ (11,300) | $ 464,300 |
| % to Sales | 2.3% | 12.1% | 6.1% | 3.5% | (5.8%) | (6.8%) | 3.3% | (2.8%) | 3.8% |

EXHIBIT 4

## Revised Budget Profit and Loss by Product
### (Including Additional Marginal Sales at a Volume of $ 1,000,000)

| | | | | Furniture and Fixtures | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Library Books | Office Machines | Office Supplies | Regular Dealer Business | Present Business Priced at 12% Gross | Additional Business at 12% Gross | Total | School Desks | Total |
| Net Sales | $ 600,000 | $ 400,000 | $ 2,000,000 | $ 8,700,000 | $ 91,700 | $ 200,000 | $ 8,991,700 | $ 800,000 | $12,791,700 |
| Cost of Sales | 504,000 | 280,000 | 1,560,000 | 7,015,300 | 80,700 | 176,000 | 7,272,000 | 704,000 | 10,320,000 |
| Gross Profit | $ 96,000 | $ 120,000 | $ 440,000 | $ 1,684,700 | $ 11,000 | $ 24,000 | $ 1,719,700 | $ 96,000 | $ 2,471,700 |
| %to sales | 16.0% | 30.0% | 22.0% | 19.3% | 12.0% | 12.0% | 19.1% | 12.0% | 19.3% |
| Variable Expenses | | | | | | | | | |
| Delivery Expense | $ 6,800 | $ 12,900 | $ 40,000 | $ 437,000 | $ 5,000 | $ 10,000 | $ 452,000 | $ 40,000 | $ 550,000 |
| Selling Expense | 11,000 | 7,000 | 38,000 | 142,100 | 1,900 | 4,000 | 148,000 | 16,000 | 220,000 |
| Accounts Receivable, Invoicing, etc., | 31,200 | 1,000 | 104,900 | 22,600 | 300 | 500 | 23,400 | 2,100 | 162,600 |
| Total Variable Expense | $ 48,200 | $ 20,000 | $ 182,900 | $ 601,700 | $ 7,200 | $ 14,500 | $ 623,400 | $ 58,100 | $ 932,600 |
| Merchandise Margin before Semi-variable Expenses | $ 47,800 | $ 100,000 | $ 257,100 | $ 1,083,000 | $ 3,800 | $ 9,500 | $ 1,096,300 | $ 37,900 | $ 1,539,100 |
| % to Sales | 8.0% | 25.0% | 12.9% | 12.4% | 4.1% | 4.8% | 12.2% | 4.7% | 12.0% |
| Semi-Variable Expense | | | | | | | | | |
| Warehouse Expenses | $ 12,000 | $ 26,000 | $ 60,000 | $ 407,300 | $ 4,700 | $ 9,400 | $ 421,400 | $ 3,700 | $ 521,100 |
| Advertising Expense | -- | 10,000 | -- | 4,000 | -- | -- | 4,000 | -- | 14,000 |
| Interest Expense | 1,000 | 1,000 | 2,000 | 7,900 | 100 | 6,000 | 14,000 | 24,000 | 42,000 |
| Total semi-variable Expenses | $ 13,000 | $ 35,000 | $ 62,000 | $ 419,200 | $ 4,800 | $ 15,400 | $ 439,400 | $ 27,700 | $ 577,100 |
| Merchandise Margin after Semi-variable Expenses | $ 34,800 | $ 65,000 | $ 195,100 | $ 663,800 | $ (1,000) | $ (5,900) | $ 656,900 | $ 10,200 | $ 962,000 |
| % to Sales | 5.8% | 16.3% | 9.8% | 7.6% | (1.1%) | (3.0%) | 7.3% | 1.3% | 7.45% |
| Fixed Expenses | | | | | | | | | |
| Warehouse Expense | $ 2,600 | $ 4,900 | $ 12,300 | $ 89,000 | $ 1,000 | $ 2,000 | $ 92,000 | $ 8,200 | $ 120,000 |
| Selling Expenses | 5,000 | 3,000 | 16,000 | 69,000 | 1,000 | 1,000 | 71,000 | 5,000 | 100,000 |
| Credit Expense | 1,900 | 1,200 | 6,200 | 27,300 | 300 | 600 | 28,200 | 2,500 | 40,000 |
| Cashier Expense | 500 | 300 | 1,900 | 8,400 | 100 | 100 | 8,600 | 700 | 12,000 |
| Buying Expense | 1,200 | 600 | 3,600 | 16,400 | 200 | 400 | 17,000 | 1,600 | 24,000 |
| Accounts Payable Expense | 900 | 500 | 2,700 | 12,300 | 100 | 300 | 12,700 | 1,200 | 18,000 |
| Administrative Expense | 8,400 | 5,600 | 28,100 | 122,500 | 1,400 | 2,800 | 126,700 | 11,200 | 180,000 |
| Total Fixed Expenses | $ 20,500 | $ 16,100 | $ 70,800 | $ 344,900 | $ 4,100 | $ 7,200 | $ 356,200 | $ 30,400 | $ 494,000 |
| Net Profit before Income Tax | $ 14,300 | $ 48,900 | $ 124,300 | $ 318,900 | $ (5,100) | $ (13,100) | $ 300,700 | $ (20,200) | $ 468,000 |
| % to Sales | 2.4% | 12.2% | 6.2% | 3.7% | (5.6%) | (6.6%) | 3.3% | (2.5%) | 3.7% |

### *Expense Distribution*

We shall now take a look at the various expense classifications and discuss briefly their relation to the business as a whole as well as some of the possible methods of budget distribution of the various costs and expenses. Of course, these are not the only distribution methods available nor are the various expense classifications fixed or applicable to all types of business.

Before we begin the discussion on the individual expenses, it should be pointed out that the distribution of expenses on the basis of sales or cost should not be used except when there is a demonstrable relation between these figures and the expenses being allocated. Nevertheless, in some instances this method is used as a matter of expediency due to lack of a better base. However, even this can be improved upon by studies of factors by which the sales or cost figures can be weighted in order to determine the distribution. Another method of solving this problem is the use of executive estimates. This approach has the advantage of making the distribution based upon the best judgment available.

Our first expense for consideration is truck and delivery expense. It could be distributed on the basis of weight, unit sale, route covered or number of orders delivered. Where the required analysis can be made and the reports are on a historical basis, as well as in small companies, these methods are excellent. In large companies and for budget purposes this is almost impossible to accomplish. An alternative to these methods is to develop standards based upon the study of representative orders. Care must be exercised in this type of situation, to ascertain that the sampling is representative. For instance, if the study is made only on the short routes the results would be biased.

In Exhibits 3 and 4, for example, the larger part of warehouse expense, attributable to the movement of merchandise through the warehouse, is displayed as semi-variable, related to the movement of the inventory. The distribution of this type of expense is generally applied on some volume of sales basis, since a large factor is the use of space, but it does not take into consideration the length of time. On the contrary, another method of distribution, by inventory turnover, takes into consideration the movement of the merchandise, but not the space occupied by the merchandise.

A more complicated procedure is the use of standard cost. By the use of standards similar to factory standards, the factors of both volume and turnover can be utilized. This is the basis on which the budget shown on Exhibit 1 has been made. The warehouse expense in question was classified as variable expense because it fluctuated in a general pattern closely related to the pattern of sales. However, in our problem we have an added factor. Ninety percent of the sales

of school desks will be shipped directly to the consumer and no warehouse expense is allocable to this business. On the other side, the furniture and fixtures of the regular line sold at a reduced gross profit will carry the same expense as the full priced merchandise.

The other aspect of warehouse expense is fixed expense, such as depreciation, basic maintenance and supervision, incurred regardless of the volume being processed through the warehouse. In Exhibit 1 this expense amounts to $120,000 and remains the same even though the business has increased. The only difference is that the expense is now allocated on a larger base. The methods discussed under the variable and semi-variable portion of warehouse expense can be used to allocate the fixed expense portion.

Selling expense is also broken down into two parts. In our case salesmen work on a two-percent straight commission basis. Some of the sales, however, are "house" sales on which no commission is paid, but all of the additional marginal sales are expected to be sold by commission salesmen. Thus, being directly related to sales, the selling expense can be distributed as a percentage of sales.

In our case the fixed expense of $100,000 represents the expense of the sales office, including the sales manager and supervisors. This expense is applicable to all products and should be distributed upon the relationship of the amount of effort expended but, from a practical standpoint, this is not always feasible. One method is the use of executive estimates. In our case we will distribute the fixed selling expense to the various products based upon the budgeted sales figures.

Advertising is frequently distributed on the basis of sales. This is a convenient method but has many pitfalls, because advertising is generally not applied proportionately. On the contrary, when the sales volume is decreasing the advertising expense may be increasing and vice-versa. The allocation based upon an analysis can be accomplished where the advertising pertains to specific products. The remaining portion, i.e., institutional advertising, may be allocated on the basis of the breakdown obtained by the allocation of product advertising. This method can also be used in allocating the anticipated advertising expense. In our case no advertising expense for the additional marginal sales is anticipated since the ultimate consumer is a government agency. We will classify this expense as semi-variable since it neither varies directly with sales nor can be considered a fixed expense.

Accounts receivable, invoicing and other paperwork in handling of the order are not in the same pattern as the sales dollars or the cost dollars. For instance, it would cost as much to bill a desk as it would to bill a book, yet the value of the desk might be a hundred times more than the book. This type of expense

can be distributed either by the number of invoices or the number of invoice lines. Of course there are many cases in which a combination of these two methods should be used. If the company is large and a study of this nature is not practical, then studies of representative samples should be made and standards instituted for each type of invoice. This is the method of distribution used in our problem.

Average inventory is normally used in the distribution of interest expense. This is the method used in Exhibit 1. In our case, however, we have a different problem. The company is already borrowing money, so any additional funds necessary to finance increased sales will have to be borrowed. Also, as discussed earlier, the majority of the marginal sales will be direct shipments and therefore cannot be related to inventory. When selling to dealers who, in turn, sell to government agencies such as school boards, the estimated average time for cash collection after delivery will be about six months. The wholesaler is forced to extend longer credit terms to his dealers. With these facts in mind we will budget interest for the marginal sales at 6 percent for six months, based on sales. Because of this variance, interest expense will be classified as semi-variable instead of variable as was done on Exhibit 1.

The remaining expenses—credit, cashier, buying, accounts payable and administrative—are fixed expenses. These expenses generally do not lend themselves to analysis or to being related to some other known factor; their distribution is usually based upon the total of all expenses already distributed. Another method is distribution on the basis of sales or cost of sales, but any relationship between sales and the incurrence of these expenses would probably be purely accidental. A third method, the use of executive estimates, has the merit of being an economical way of allocating expenses and, at the same time, produce results more nearly in relation to the amount of effort expended on a given product. While it may be argued that these estimates may be high or low, this can be partly offset by computing the average of several executives' estimates, thus arriving at a composite estimate close to actual.

In our case study we have based buying and accounts payable on cost, and the distribution of the credit, cashier and general administrative expenses on sales.

The distribution of expenses is now complete. We are ready to foot the various sections of the budget and compute the percentages of the various profit levels to sales.

### *Management Reports*

The question raised by management was how will the net profit be affected

if the additional marginal business is added. The answer to this question can be determined by compiling a profit and loss statement for the anticipated additional business showing the contribution this business is making toward the marginal profit. Such a profit and loss statement showing the results at the two different levels of operation computed in our budget (Exhibits 3 and 4) is depicted on Exhibit 5.

Marginal Budgeted Profit and Loss
of Increased Sales at a 12% Gross Profit

| | Increased sales of $550,000 | | Increased sales of $1,000,000 | |
|---|---|---|---|---|
| | Furniture and fixtures | School desks | Furniture and fixtures | School desks |
| Net sales | $150,000 | $400,000 | $200,000 | $800,000 |
| Less: | | | | |
| Cost of sales | 132,000 | 352,000 | 176,000 | 704,000 |
| Variable expenses | 10,900 | 29,100 | 14,500 | 58,100 |
| Semi-variable expenses | 11,500 | 13,900 | 15,400 | 27,700 |
| Gross contribution to margin | $ (4,400) | $ 5,000 | $ (5,900) | $ 10,200 |
| Less: | | | | |
| Decreased sales and margin of regular furniture and fixtures reduced to a 12% gross profit | ( $8,300 ) | | ( $8,300 ) | |
| Net contribution to margin | $(7,700) | | $(4,000) | |

( ) Loss

**EXHIBIT 5**

We have included as net sales only those additional sales which represents the estimated increased sales due to the adding of the line of school desks less the reduction in selling price of the furniture and fixtures line. From this sales revenue we have deducted the cost of sales, variable expenses, and semi-variable expenses, which represent the additional expenditure necessary to realize the estimated sales revenue. The gross contribution to margin is $600 at the $550,000 volume rate and $4,300 at the $1,000,000 volume rate toward fixed expenses. However, in order to get this additional business, it will be necessary to reduce the margin on $100,000 of sales of furniture and fixtures, which results in a loss of margin of $8,300. When this is deducted from the gross contribution to margin we have loss margin at the $550,000 volume level of $7,700 and loss margin of $4,000 on the $1,000,000 volume level. Assuming that the semi-variable expenses remain the same in relation to sales, $40,000 additional marginal business above the $1,000,000 volume level would have to be secured in order to maintain the same dollar profit as originally budgeted.

For the financial management, who desire to look at the detail figures, we would present the budgets as displayed in Exhibits 2, 3 and 4. For the line management the effects upon the total business should be shown by a summary report such as Exhibit 6.

Summary of the Estimated Effect of Acquiring Marginal Business
(000 Omitted)

| | Budget business at present level | | Budget including marginal sales of $550,000 | | Budget including marginal sales of $1,000,000 | |
|---|---|---|---|---|---|---|
| | Sales | Net profit before tax | Sales | Net profit before tax | Sales | Net profit before tax |
| Furniture & fixture | $8,800 | $298 | $8,942 | $291 | $8,991 | $301 |
| Library books | 600 | 12 | 600 | 14 | 600 | 14 |
| Office machines | 400 | 46 | 400 | 48 | 400 | 49 |
| Office supplies | 2,000 | 116 | 2,000 | 122 | 2,000 | 124 |
| School desks | -- | -- | 400 | (11) | 800 | (20) |
| Total | 11,800 | $472 | 12,342 | $464 | $12,791 | $468 |

**EXHIBIT 6**

This summary shows the effect of the marginal business on each segment of the business. It should be noted that the products which do not have marginal business, increase their net profit before tax. This is due to our election to distribute the fixed expenses over the marginal business. The budgets in this case are made for a complete year and broken down on a monthly basis for use in comparing actual to budget.

### *Historical Profit and Loss*

Budget information is of little value unless it is compared at some point with the actual performance. The process of reporting historical profit and loss has two facets, that of making monthly reports, and the preparation of a fiscal year report.

First, we shall look at the monthly reports. Our sales and costs for this report will be classified in such a manner that we will have these figures at actual for our monthly report. In this case of furniture and fixtures there are two classifications, one for sales with normal gross profit, the other showing the amount of sales and applicable cost for those sales which have a reduced gross profit. The other products would only be segregated into the proper product classes.

For the distribution of variables and semi-variables a standard percent of sales is computed for each expense in each class product. These percentages are applied each month to the accumulated sales to arrive at a standard expense in each product classification. The standard expense dollars for each expense are totaled and the actual expenses allocated on the basis of these standard expense dollars.

A standard expense is not computed for the fixed expenses but the actual expense is allocated based upon the percent of each fixed expense in each product classification to the total of that expense.

The monthly reports to management have a separate sheet for each product classification. Each report presents in columnar form the actual profit and loss for that month, the budget for that product, the variance from budget, and a duplicate set of columns presents the year to date in the same manner. For furniture and fixtures, two reports are made, for the normal profit business and for the marginal business. The total of all these reports equals the profit and loss as taken from the ledger.

The fiscal year historical profit and loss by product would be computed in the same manner as has been discussed in computing the budget. This would be accomplished by using the actual figures instead of the estimated figures. A year-end report similar to the monthly reports would be issued.

## Conclusion

In order to accomplish profit maximization, accounting must furnish management with information on which decisions can be made regarding marginal sales. This goal can be accomplished by the establishment of a budgeted product profit and loss. From the budgeted product profit and loss the necessary information can be taken to solve the problems arising in the handling of these sales. Management may be considering either the adding of a new product or the discontinuance of an old product; for this type of a decision, management must have good cost of distribution information as well as factory costs. It is the duty of the accountant to develop such information so that it is available when the need arises.

# *Variance Analysis in Profit Planning*

by C. RUSSELL CLAUSEN

CERTAINLY, it is far more beneficial profit-wise if the accountant can tell his employer or his client what action he should take rather than where his money has gone. One form of this "forward" accounting is planning for a profit. The oldtime formula was "buy cheap, sell high, and hope for a profit." The first two instructions are indeed worthy, but do not necessarily lead to a profit. Why not start with the conclusion and work backward? Set the profit that is desirable in view of the investment and then figure what must be done to accomplish that end.

## *Setting the Goal First*

Let us take, as an example, the case of a small manufacturing plant fabricating four lines of metal products. This firm has an investment in land and buildings of $1,000,000, equipment of $2,500,000, inventories of $650,000, and cash and receivables of $350,000—a total of $4,500,000.

Three of the four major lines include several product items each; the fourth line, a relatively new development, includes only one product. Identifying them as A, B, C and D, let us plan what we must do to earn a reasonable return on our investment. Considering that a return of 5 or 6 percent can usually be obtained with relatively little risk, a fair return might be considered 10 percent for the risk involved. Since we are also a partner of Uncle Sam (or vice versa) this will mean a necessary profit before taxes of roughly 20 percent. So we have to make $900,000 profit before taxes in order to achieve our end of a ten-percent return on capital.

As a further guide in our planning, let us look at the latest year's operating statement, broken down to product lines (Exhibit 1).

If we compare this profit of $328,000 with our desired before-tax net income of $900,000, it is evident that we have some major operations to perform to reach our objective. Persistent failure to do so will damage our ability to grow, to replace assets as they become worn out or obsolete and, ultimately, our ability to pay dividends to the owners.

---

**C. RUSSELL CLAUSEN**, Lansing Chapter, 1947, is Assistant Treasurer of Motor Wheel Corporation, Lansing, Michigan. He has been with this company for over 30 years. Mr. Clausen is Past President of the Lansing Chapter.

Operating Statement
(000 omitted)

| | Product Line | | | | |
|---|---|---|---|---|---|
| | A | B | C | D | Total |
| Investment (buildings and equipment) | $1500 | $1200 | $600 | $250 | $3550 |
| Inventories | 300 | 150 | 100 | 50 | 600 |
| Sales | $2400 | $1300 | $500 | $300 | $4500 |
| Less freight out | 20 | 10 | 5 | - | 35 |
| Cost of sales (standard) | 2016 | 1222 | 460 | 225 | 3923 |
| Gross profit | $ 364 | $ 68 | $ 35 | $ 75 | $ 542 |
| % of profit on gross sales | 15.2% | 5.2% | 7% | 25% | 12.1% |
| Scrap sold, net | $ 20 | $ 12 | $ -- | $ -- | $ 32 |
| Purchase variance | 5 | 4 | 1 | -- | 10 |
| Production variances | (80) | (20) | (10) | (5) | (115) |
| Unearned burden | (10) | (10) | (1) | (0) | (21) |
| Manufacturing profit | $ 299 | $ 54 | $ 25 | $ 70 | $448 |
| Administrative, selling and engineering expense | | | | | 120 |
| Profit before income tax | | | | | $ 328 |

**EXHIBIT 1**

## *Determining Attainable Objectives Next; Budget*

The problem, inability to make a satisfactory profit, was clear. What was the solution? The sales manager, the manufacturing manager, the chief engineer, the purchasing agent, the general manager and the controller-treasurer, all got together to consider possible approaches. They recognized that an attack on the problem must proceed on all fronts: volume, scrap recoveries, material and labor usage, manufacturing expense, freight costs, administrative and engineering expense, and product development. It was agreed that sales of Product A might be increased by 50 percent in the coming year with 30 percent added sales effort. Product B was one that was passing out of the picture, so that no additional sales volume could be expected; in fact, a drop of 10 percent could reasonably be anticipated. It was agreed also that price for Product B should not be dropped; a drop in price would have little effect on volume of this

Projected Operating Statement
(000 omitted)

| | Product Line | | | | | |
|---|---|---|---|---|---|---|
| | A | B | C | D | Total | % of sales |
| Sales | $3600 | $1170 | $750 | $600 | $6120 | |
| Freight out | 30 | 9 | 8 | -- | 47 | |
| Cost of sales standard | 3024 | 1100 | 690 | 450 | 5264 | |
| Gross profit | $ 546 | $ 61 | $ 52 | $ 150 | $ 809 | |
| % gross profit | 15.1% | 5.1% | 7% | 25% | 12.2% | |
| Scrap sold, net | $ 30 | $ 8 | $ -- | $-- | $ 38 | .6 |
| Purchase variance | 10 | (3) | 1 | 2 | 10 | .2 |
| Production variance | (8) | (14) | (1) | -- | (23) | .4 |
| Overearned burden | 70 | (12) | 1 | 10 | 69 | 1.1 |
| Manufacturing profit | $ 648 | $ 40 | $ 53 | $162 | $ 903 | |
| Administrative, selling and Engineering expense | | | | | 134 | |
| Profit before taxes | | | | | $ 769 | |

**EXHIBIT 2**

item. Product C could be expected to move with A, while D, the new line, would double in volume. The overall increase in total sales, then, could amount to roughly 35 percent. With this production volume, the plant manager thought he could overearn burden by 10 percent and reduce manufacturing variance to about 10 percent of the past year amount.

With these figures agreed upon, the controller was asked to prepare a budget which would yield a profit approaching to the $900,000 goal. The result is shown in Exhibit 2.

At the subsequent meeting to discuss this proposed budget it was agreed that, though short of the previous objective, it was realistic, so it was accepted as the annual budget.

### *Working Out the Details; Monthly Budgets*

The annual budget was broken down into monthly budgets based on the seasonal variations expected in sales. For one of the early months, the forecast budget is shown in Exhibit 3.

Each month, as soon as the sales figures were available, an adjusted budget was built up, based upon the same profit percentages for other expenses and variances. The result for the operating month (forecast in Exhibit 3) is shown in Exhibit 4.

The point to observe in comparing these two budgets is that all items are the same in relation to sales total; only the sales totals are changed. Therefore, any difference in budgeting gross profit must be due solely to volume. Initially, then, we can account for the excess of $9.9 thousands above forecast gross profit, in terms of volume. But that is not the whole story. We have not found our actual profits yet.

**Operating Budget Forecast**
**(000 omitted)**

| | Product Line | | | | |
|---|---|---|---|---|---|
| | A | B | C | D | Total |
| Sales | $250 | $103.3 | $100 | $62.5 | $515.8 |
| Freight out | 3.3 | .8 | .8 | -- | 4.9 |
| Gross profit | $ 38 | $ 5.3 | $ 7 | $15.6 | $ 65.9 |
| Scrap sales | | | | | 3.0 |
| Purchase variance | | | | | 1.0 |
| Production variance | | | | | (2.1) |
| Overearned burden | | | | | 5.7 |
| Manufacturing profit | | | | | $ 73.5 |
| Admin., selling, engr. expense | | | | | 13.5 |
| Budgeted profit before taxes | | | | | $ 60.0 |

**EXHIBIT 3**

Adjusted Operating Budget
(000 omitted)

| | Product Line | | | | |
|---|---|---|---|---|---|
| | A | B | C | D | Total |
| Actual sales | $300 | $80 | $110 | $75 | $565 |
| Freight out | 3.9 | .6 | .9 | -- | 5.4 |
| Gross profit rate | 15.1% | 5.1% | 7% | 25% | |
| Gross profit | $45.3 | $4.1 | $7.7 | $18.7 | $ 75.8 |
| Scrap sales, (net) | | | | | 3.4 |
| Purchase variance | | | | | 1.1 |
| Manufacturing variance | | | | | (2.3) |
| Overearned burden | | | | | 6.2 |
| Manufacturing profit | | | | | $ 84.2 |
| Admin., selling, engineering expense | | | | | 13.5 |
| Adjusted budget profit before tax | | | | | $ 70.7 |

**EXHIBIT 4**

## *Comparison of Adjusted Budget to Actual; Variances*

As operating figures become available, it is possible to exhibit the actual operating results for the month. These are shown in Exhibit 5.

Operating Statement
(000 omitted)

| | Product Line | | | | | |
|---|---|---|---|---|---|---|
| | A | B | C | D | Total | Variance |
| Actual sales | $300 | $80 | $110 | $75 | $565 | -- |
| Cost of sales | 246 | 76 | 99 | 50 | 471 | |
| Freight out | 5.1 | .7 | 1 | -- | 6.8 | 1.4* |
| Gross profit | $ 48.9 | $ 3.3 | $ 10 | $25 | $ 87.2 | 11.4 |
| % gross profit | 16.3% | 4.1% | 9.1% | 33 1/3% | 15.4% | |
| Scrap sold, net | | | | | 4.0 | .6 |
| Purchase variance | | | | | .5 | .6* |
| Manufacturing variance | | | | | (2.5) | .2* |
| Overearned burden | | | | | 3.5 | 2.7* |
| Manufacturing profit | | | | | 92.7 | 8.5 |
| Admin., selling and engineering expense | | | | | 15.0 | 1.5* |
| Profit before taxes | | | | | 77.7 | 7.0 |

*unfavorable variance

**EXHIBIT 5**

The variance column at the right shows the differences between the actual figures and the adjusted budget figures which reflect margin influences. Thus it appears that on the basis of our budgeted percentages of profit, we expected to make $75.8 gross profit on actual sales, but actually made $87.2, a gain of $11.4, due to greater profit margins than were planned for. Since sales volumes in Exhibits 4 and 5 are the same, any differences in gross profits in dollars are due to increased margins and/or "freight out" savings.

Analyzing the variances between original forecast and actual performance for gross profit, we find, in total, a favorable balance (gain) of $21.3, consisting of:

| | |
|---|---|
| a volume gain of | $ 9.9 |
| a profit margin gain of | 12.8 |
| a "freight out" loss of | (1.4) |
| Total | $21.3 |

But going further, to an analysis of variance in final profit figure, we find a difference between the original forecast and actual performance of $17.7. Since we have already explained some reasons for this variance, somewhere between gross profit and net profit is the difference of $3.6, which results from a loss in nonmerchandising operations ("loss" means unfavorable in comparison with plan, it does not imply a loss in the usual sense of an unrecoverable outlay).

Before going on to analyze the source of this "loss," let us look at responsibilities. The volume variance and the margin variance are responsibilities of the sales manager. He apparently exceeded even his own expectations. Worthy of note is the higher freight item, as compared to budget. Possibly his decision to pay the freight on more than usual orders may have been a significant factor in generating added sales. Note also that his margin of profit increased in spite of our absorption of this freight increase. The other variances are mostly the responsibilities of the plant manager. For these items, we had a total unfavorable variance of $3.6. Administrative increases accounted for $1.5 of this, perhaps reflecting increased selling expense. Its exact composition could only be determined by breaking down administrative expense among the three categories, presently lumped together. Aside from this, the balance of $2.1 is the net result of several expense management and scrap management activities. A closer look at these, shows what happened. Exhibit 6 indicates the factors that produced the net "loss" of $2.1 in manufacturing variances of the several kinds.

Manufacturing Variances
(000 omitted)

| | Forecast | Adj. budget | Volume variance | Actual | Expense variance |
|---|---|---|---|---|---|
| Scrap sales | 3.0 | 3.4 | .4 | 4.0 | +.6 |
| Purchase variance | 1.0 | 1.1 | .1 | .5 | -.6* |
| Production variance | (2.1) | (2.8) | .7 | (2.5) | +.3 |
| Overearned burden | 5.7 | 6.2 | .5 | 3.5 | -2.7* |

(Figures in brackets represent items which were not expected to provide savings; i.e. unfavorable production variances, which are equivalent to losses).

**EXHIBIT 6**

Scrap sales recovered $1.0 more than we had planned, due $ .4 to increased volume and $ .6 to other factors—we hope it is due to better scrap prices, better sorting of scrap, etc. Purchase variances did not meet our expectations, whether due to unfavorable prices in spite of volume purchases or due to poor buying practice. Production variances were greater than originally forecast, even better than would be expected for the actual volume of operations. Less burden was earned than originally planned and considerably less ($ .7) than could be expected at the actual volume of operations. A possible explanation is that increased sales caused more overtime premium in indirect labor; investigation is needed to find out whether this is true.

### *What Have We Accomplished?*

By setting up a forecast budget we first established what we would have to do to make the profit that we wanted to make. Then through the use of the adjusted budget, as well as the forecast budget in comparison with actual performance, we were able to point up where we fell down and to define the areas of responsibility. Under the old system of "buy cheap, sell high, and hope for a profit" we might have had a reasonably rosy feeling when we came up with any profit higher than "last month" or "same month last year" when we made $50,000. We would have overlooked the fact that our burden was actually uncontrolled to the extent of $2,700. Being aware of such a condition, perhaps there is something that we can do about it. Smug complacency with what we have done can rob us of the urge to cure an evil.

Further, the discussions on the budget brought out the fact that Product B was gradually passing out of the picture; also that Product D, the new one, was far exceeding other products in yield. This could point up the need of research, constant research, to develop new products, which would both fill the capacity void being created by Product B and develop the higher profit percentage, as that of D. New products which have not yet reached the competitive nature of older products should produce unusual returns, for they are the result of ingenious use of manpower, materials and equipment.

The accountant must be the one who says "this is what we must do to make a profit." And he must follow up on performance, to point out the specific activities which are in need of managerial attention.

# *Profit Fluctuations Caused by Standard Cost Variances*

by CHARLES M. REINHERR

A GREAT DEAL has been written about the benefits of standard costs. Yet standard costs, like some of our spectacular wonder drugs, can at times have undesirable side effects. Certain side effects, particularly those which affect profit and loss statements by temporarily overstating profits or losses, are of special concern to anyone who must explain the reasons for changes in the rate and/or amount of profit from one month or accounting period to another.

To understand these side effects, let us look at some cases. In all these it is assumed that inventories are valued at standard cost and that some or all of the variances are directly absorbed in cost of goods sold. Such disposition of variances is often made (*N.A.[C].A. Bulletin,* Research Series No. 10, entitled, "Costs Included in Inventories," August 15, 1947, reports 54 out of 65 companies did so).

### *Lower Profits after Reducing Actual Costs*

In our first case let us suppose the standards have been in effect for some time. The first of February, Joe comes up all excited from the factory. He has found a way to double production on one of the operations necessary to produce our product. We pat Joe on the back and make a note to check his alleged savings to see if they materialized. Sure enough, when we close the books for February, direct labor variance shows a gain or credit which we can trace to Joe's savings. We take this credit variance into the profit and loss statement. In writing up February's operations we mention Joe's savings as being a reason for the increase in profits.

Effective July 1st we revise our standard costs. Let us suppose that all changes from the old to the new standards offset each other with the exception of Joe's savings. Hence, the net of the new standards is that they are lower than the old ones by the amount of this savings. When we issue our July statements we find profits are down. Let us assume that sales, costs and production for July (with the new standards) are the same as in June (when the

---

**CHARLES M. REINHERR**, Akron Chapter (Cleveland, 1929), is currently in charge of Forms Control, The Firestone Tire and Rubber Co., Akron, Ohio, with which firm he has held various accounting positions during the past 30 years. He holds B.S. and M.A. degrees from the University of Pittsburgh. Mr. Reinherr is Past President of the Akron Chapter. He contributed previously to the *Bulletin.*

old standards were still in effect). We explain that profits are down due to selling "high cost" inventories. "What high cost inventories?", we are asked. At this point we must confess it is inventories produced prior to Joe's savings. "But we sold those inventories months ago," we are told. By the time we are through explaining that one, we are ready to go looking with a shot gun for the guy who invented standard costs.

### *Inventory Valuation Is the Key*

What happened was that we continued to value our finished goods inventory at standards set prior to (and which did not include) Joe's savings. At the same time, by absorbing the credit labor variance, we were basing our profit and loss statements on costs which did include Joe's savings. When we revised standard costs (July 1st) we wrote down the finished goods inventory to the new standards. This write down must be absorbed on our profits and loss statements and we did so by pro-rating it over the period during which the inventory was being sold. (Another way of handling would have been to have kept on using the old standards in costing sales until the finished goods inventory on hand at the time of the cost revision was sold.) As a result, our July profit and loss statement reflects cost of goods sold being charged, in effect, at the old standards without Joe's savings. Furthermore, there is no credit labor variance, since the cause of this variance (Joe's savings) has been incorporated into the new standards. Thus, our profits are back to what they were before Joe's savings—but the time is five months after we first reported an increase in profits due to his savings!

This may be more readily seen if we look at Exhibit 1. This exhibit shows a simple profit and loss statement with everything held constant except the changes due to Joe's savings. To avoid confusion caused by product mix, it is assumed only one item is manufactured. In looking at this exhibit, keep in mind the problem is to explain the decrease percentage in profits from 20.8 percent in June to 16.7 percent in July.

### *Difficult to Recognize the Problem in Advance*

Of course you may be thinking that we should not have let Joe's savings show up until the finished goods inventory produced prior to the savings was sold. This is easy to say, but the difficulty is that we often do not recognize such a case until hindsight shows us that a current month's loss is not really a loss but a correction of an overstatement of the previous month's profit. To

EXHIBIT 1

PROFIT FLUCTUATIONS CAUSED BY A REDUCTION IN ACTUAL COST

| Assume: | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| Unit Selling Price | $1.20 | $1.20 | $1.20 | $1.20 | $1.20 | $1.20 | $1.20 | $1.20 | $1.20 |
| " Actual Cost | 1.00 | .95 | .95 | .95 | .95 | .95 | .95 | .95 | .95 |
| " Standard Cost | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | .95 | .95 | .95 |
| No. of Units Sold | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| " " " Produced | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| " " " in Inventory | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 100 |
| Finished Goods Inventory | | | | | | | | | |
| Value @ Old Standards | $200 | $200 | $200 | $200 | $200 | $200 | $200 | $190 | $190 |
| " @ New " | 200 | 200 | 200 | 200 | 200 | 200 | 190 | 190 | 190 |
| Adjustment | $ - | - | - | - | - | - | 10* | - | - |

PROFIT and LOSS STATEMENT

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sales | $120 | $120 | $120 | $120 | $120 | $120 | $120 | $120 | $120 |
| Cost of Goods Sold | | | | | | | | | |
| At Standard | $100 | $100 | $100 | $100 | $100 | $100 | $ 95 | $ 95 | $ 95 |
| Cost Variance (Gain) | - | (5) | (5) | (5) | (5) | (5) | - | - | - |
| Finished Goods Inventory Adjustment | - | - | - | - | - | - | 5* | 5* | - |
| Total Cost | $100 | $ 95 | $ 95 | $ 95 | $ 95 | $ 95 | $100 | $100 | $ 95 |
| Gross Margin | $ 20 | $ 25 | $ 25 | $ 25 | $ 25 | $ 25 | $ 20 | $ 20 | $ 25 |
| % to Sales | 16.7% | 20.8% | 20.8% | 20.8% | 20.8% | 20.8% | 16.7% | 16.7% | 20.8% |

* Absorbed on pro rata basis over months inventory is being sold

further complicate matters, "Joe's savings" can take many and varied forms. In fact, any reduction in material, labor or variable overhead cost, if permanent (at least lasting longer that it takes to liquidate the finished goods inventory), may turn out as such a case. Often such reductions seem temporary, or are offset by losses, or sneak up on us little by little, so we fail to realize their significance until we revise standard costs.

### *Lower Profits after Decreasing Standard Costs*

As a second case let us suppose Joe tells us in advance about his savings and that it is going to be in operation (he tells us) just about the time our new standards go into effect. So we include it in the standards.

LOWER PROFITS AFTER DECREASING STANDARD COSTS

| | December | January |
|---|---|---|
| Assume: | | |
| Unit Selling Price | $1.20 | $1.20 |
| " Actual Cost | 1.00 | 1.00 |
| " Standard Cost | 1.00 | .95 |
| No. of Units Sold | 100 | 100 |
| " " " Produced | 100 | 100 |
| " " " in Inventory | 200 | 200 |
| Finished Goods Inventory | | |
| Value @ Old Standards | $200 | $200 |
| " @ New " | 200 | 190 |
| Adjustment | - | 10* |
| | PROFIT & LOSS STATEMENT | |
| Sales | $120 | $120 |
| Cost of Goods Sold | | |
| At Standard | $100 | $ 95 |
| Cost Variance - Loss | - | 5 |
| Finished Goods Inventory Adjustment | - | 5* |
| Total Cost | $100 | $105 |
| Gross Margin | $ 20 | $ 15 |
| % to Sales | 16.7% | 12.5% |

* Absorbed on pro rata basis over months inventory is being sold

**EXHIBIT 2**

In closing the first month's business under the new standards, we find some loss or debit labor variance. We trace it down to Joe's having difficulty getting his savings going. "There will be a delay of a couple of months—but no more than that, for sure," he tells us. Well, with a direct labor loss variance such as this there is only one thing to do—write it off to profit and loss. Now let us suppose that after the statements are issued, the president calls us in to explain a decrease in profits. He has papers all over his desk and has been comparing the current month's profit with the previous month. He has found sales, production, unit costs, expenses, all to be about the same in both months, so he wonders why the profits are different. Of course, one can explain what happened, but it is difficult to overcome the suspicion in the president's mind that maybe he would be better off with no accountant.

What happened was that, although we changed standards, we adjusted the cost of sales to the old standards (or we continued to use the old standards in costing sales), since the sales were made from finished goods inventory. Now these old standards included the high cost prior to Joe's savings. Then, when we wrote off the loss variance due to Joe's not realizing his savings, we were in effect providing for the same item of cost a second time. Exhibit 2 presents a condensed profit and loss statement to illustrate this.

### *When Production Varies from Sales*

As a third case let us expand our second case and assume production was twice sales in both months under review. Let us also assume that this is according to plan (production being leveled out while sales are sharply seasonal) and thus rule out volume or period variances. What happens in a case such as this is that our profits are down by twice the amount of Joe's unrealized savings on each unit sold. Exhibit 3 illustrates this. Here again, the problem is to explain the decrease in profits from 16.7 percent in December to 8.3 percent in January.

### *Side Effects Often Obscured*

Fortunately, the side effects are generally lost or mitigated among dozens of other variables occurring from one month to the next. They seldom show up in such a clear fashion as in the above cases. Since they are obscured, we often fail to realize they exist and, as a result, only vaguely understand them.

These side effects are likely to occur with greater frequency as the trend to earlier closings develops. One aid toward achieving an earlier closing is to

issue the profit and loss figures first, and to close the books and look for the reasons second. By then it is too late to take corrective action. All this means we must not only know the reasons or causes of all the variances being absorbed but must understand their ultimate effect on the profit and loss figures.

LOWER PROFITS FROM DECREASED STANDARDS

AND PRODUCTION EXCEEDING SALES

| | December | January |
|---|---|---|
| Assume: | | |
| Unit Selling Price | $1.20 | $1.20 |
| " Actual Cost | 1.00 | 1.00 |
| " Standard Cost | 1.00 | .95 |
| No. of Units Sold | 100 | 100 |
| " " " Produced | 200 | 200 |
| " " " in Inv. (Beginning) | 100 | 200 |
| " " " " " (End) | 200 | 300 |
| Beginning Finished Goods Inventory | | |
| Value @ Old Standards | $100 | $200 |
| " @ New " | 100 | 190 |
| Adjustment | $ - | $ 10 * |
| | PROFIT & LOSS STATEMENT | |
| Sales | $120 | $120 |
| Cost of Goods Sold | | |
| At Standard | 100 | 95 |
| Cost Variance - Loss | - | 10 |
| Finished Goods Inventory Adjustment | - | 5 * |
| Total Cost | $100 | $110 |
| Gross Margin | $ 20 | $ 10 |
| % to Sales | 16.7% | 8.3% |

* Absorbed on pro rata basis over months inventory is being sold

**EXHIBIT 3**

### *Recapitulation*

The foregoing cases have been illustrative of certain undesirable side effects standard costs can have on the profit and loss statement. It may be helpful if we summarize the conditions under which these side effects become operative. Thus we have danger signals to watch if we are to avoid them or, at least, to know in advance what we are getting into. It should be noted, however, that these occur only if we use standard costs to value inventories, and variances are being currently absorbed.

A reduction in actual costs will result in over-stating profits. The amount of overstatement, in a given month, will be equal to the amount of reduction in cost during the month. The duration of the overstatement will be the time required to sell the finished goods inventory. The total overstatement will be the amount by which the finished goods inventory is valued in excess of actual cost. If the reduction in actual costs is only temporary (lasting for less than the time it takes to sell the finished goods inventory), this overstatement is not too serious, and may even be a desirable way of accounting for the lower costs.

Decreasing standards to reflect a previously realized reduction in actual costs will result in understating profits. This is, of course, the offset to the above mentioned overstatement. It is what happened in the first case mentioned in this paper.

Both of the foregoing also work in reverse, i.e., (1) an increase in actual costs will result in understating profits (or in increasing losses), and (2) increasing standards to reflect a previously realized increase in actual costs will result in overstating profits.

By setting standards above actual costs, profits can be overstated during the time required to sell the finished goods inventory. The total overstatement will be the amount by which the finished goods inventory is valued in excess of actual cost. The offset to this overstatement occurs in either:

1. An increase in actual costs, resulting in understated profits, or
2. Decreasing standards to the realized actual costs, which also results in understated profits.

By setting standards below actual costs, profits can be understated (or losses overstated). It is what happened in the second case discussed in this paper.

Production greater than sales will result in even greater misstated profits. This can be expanded as follows:

1. Production greater than sales, plus credit variances, equals overstated profits.
2. Production greater than sales, less debit variances, equals understated profits.

For instance, when production is greater than sales, and we have credit variances, the amount of overstatement in profits will be the amount of credit variance applicable to units produced in excess of units sold. This overstatement can be offset when (1) production is less than sales or (2) there is a revision in standard costs.

The reverse may be true if production is less than sales, provided the variances continue beyond the life of the finished goods inventory. During the life of the finished goods inventory, having production less than sales will merely reduce the overstatement or understatement of profits.

The variation in profits, when production is greater or less than sales, can become an especially difficult problem if we are using *lifo* on a raw material subject to significant price fluctuations. Concurrently absorbed material price variances, especially if based on receipts into raw materials inventories, will probably show little relationship to sales. Hence, anyone who takes the change in price (from the beginning of the month to the end of the month) and multiplies it by the number of units sold is apt to come up with a different figure than the amount of variance which was taken into the profit and loss statement. Attempts to explain to a nonaccountant the reason for such a difference can often be less than successful.

Over a period of time, the above principles, operating positively and negatively, may offset each other. However, this is like having a table with some legs too long and others too short. It is small comfort to know that the legs average out at the right length.

## Summary

The root of the problems we have been discussing is that we usually relate profits to sales, while variances are related to production or purchases. Whenever these variances are writen off without reference to inventories, they can result in profits (when measured against sales) going exactly opposite to the direction we anticipate they should go. It is hoped this analysis will help increase the understanding of this often puzzling condition.

# *Developing the Profit Planning Procedure*

by CHARLES P. VOLLER

PROFIT PLANNING includes a complete financial and operational plan for all phases and facets of the business. It therefore encompasses budgeting programs for control of expenses, sales forecasting and sales planning programs, planning and programming additions to or deletions from working capital and plant investment, and a review of all factors which have an impact on return on investment, both from a short-term viewpoint of one year and longer periods of time. The profit planning function must not be merely financial in scope. It must disclose the methods and programs by which the financial goals set forth are to be achieved.

This type of program is usually started by the chief accounting officer because of the multitude of facts that are available to him. Usually, as a starting point, budgetary control programs are installed in some form or another and from this point the planning function evolves.

Once the plan is defined, the development of a formal or informal format is the next step. The information necessary to the plan can be rigidly defined or broadly outlined. This must be done whether there is extensive participation or not. A check list and time schedule of some type must be prepared. The format is developed starting with estimated sales, manufacturing costs and capacities, service expenses, administrative, selling and engineering expenses, long-term debt expenses, etc. In addition to these basic profit and loss factors, programs and plans must be established for each individual function.

An example of a formal profit plan format or outline is as follows:

PROFIT PLAN FORMAT

*Review of 1959 Operations*

1. Earnings statement comparison, 1959 profit plan vs. estimated 1959 actual.
2. Narrative for 1959 operations to include:
   a. Competitive conditions, prices, products, etc.
   b. Economic conditions by major market areas

---

**CHARLES P. VOLLER**, Olean-Bradford Area Chapter (Jamestown, 1956), is Controller, Clark Bros. Company, a major subsidiary of Dresser Industries. Prior to joining Clark Bros. Co., he was Controller for the Bovaird and Seyfang Mfg. Co., Bradford, Pennsylvania, also a subsidiary of Dresser Industries. Mr. Voller received his B.S. Degree in Business from Indiana University.

c. Research and development—new products, product improvement
d. Organization review
e. Financial review.

3. Earnings and expense comparisons, 1959 profit plan with 1959 estimated actual, by operating responsibility.
4. Explanation of variances.
5. Capital budget summary.
6. Explanation of variance from planned capital expenditures.
7. Major balance sheet items, comparison 1959 profit plan vs. 1959 estimated actual.
8. Explanation of balance sheet variances.

*Five-Year Projection*

1. Earnings statements and balance sheet statistics for 1960-1964.
2. Narrative for five-year projection to include:
   a. Growth philosophy
   b. Markets
   c. Research and development—products
   d. Management development and organization planning
   e. Facilities planning.
3. Charts and exhibits, to be inserted to graphically illustrate specific points, i.e., sales trends by products, relationship of capital expenditures to funds provided, etc.

*1960 Profit Plan*

1. Statement of earnings comparison—1959 estimated actual vs. 1960 profit plan.
2. Narrative for 1960 profit plan to include:
   a. Sales plan—prices, markets, products, etc.
   b. Research and development—new products, product improvement
   c. Management development.
3. Detailed capital budget program.
4. Explanation of capital budgets.
5. Planned balance sheet by month with commentary on significant changes.

*Financial Statements*

Supplemental financial data, such as product earning statements, government contracts, analysis of change in invested capital, etc.

### *Assignment of Responsibility*

After the plan has been defined and a program developed it becomes necessary to assign the responsibility for preparation, coordination, analysis and interpretation of the plan. No matter what his title may be, one person must have this responsibility. At this point the question of participation is of prime importance. Each and every person responsible for a managerial function should be given the responsibility of stating his plans for the periods under consideration. These plans are, obviously, subject to review by each immediate superior. However, based on the information available to a manager he should know best the requirements for his department necessary to accomplish the overall goals of the company.

One method of assigning the responsibility and obtaining the necessary participation is a series of letters outlining the information desired, as illustrated below:

> The review of our 1960 profit plan will be held on September 15, 1959. Our plan this year is divided into three phases: review of 1959, five-year projection 1960-1964 and 1960 profit plan.
>
> We ask that you prepare the following information by August 15, for use in the plan—
>
> 1. *Review of 1959:*
>
> —Actual design progress compared to planned design program for new products as well as redesign of current products.
>
> —A comparison of estimated actual and planned engineering expense by function with an explanation of major differences.
>
> 2. *Five-Year Projection 1960-1964:*
>
> —Planned product program to meet sales goals.
>
> —Planned expense by function to achieve product development program.
>
> 3. *1960 Profit Plan:*
>
> —Planned new product development by project with an estimated cost of each project.
>
> —Redesign of current products by project with an estimated cost for each project.
>
> —Departmental budgets with an explanation of major differences from estimated 1959 expenses.

With a communication such as this to each responsible person in the organization, the information for the profit plan can readily be reviewed and assembled.

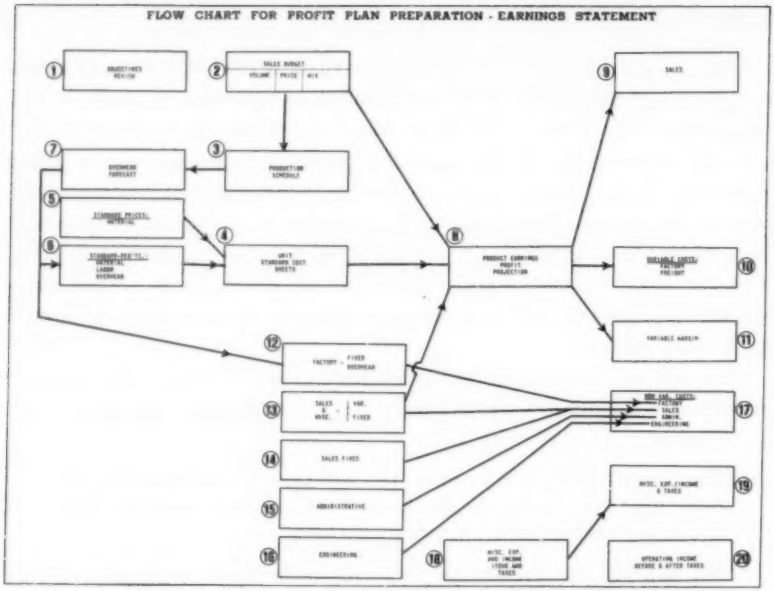



**EXHIBIT 1**

Exhibit 1 is a flow chart showing in detail the steps involved in preparation of the profit plan earnings statement. It is apparent that this information must be assembled from a variety of sources within the company. The use of formal means of communication, which prescribe the data required as outlined above, will materially simplify the preparation of such data.

## Coordination of Work Involved in the Preparation of the Profit Plan

Obviously there must be considerable communication between those responsible for the major business functions and the person in charge of profit planning. Most basic information must be completed and approved before functions dependent upon this information can begin to make their plans. One of the best means to make certain that this information is available when needed is to develop a time schedule. Each person responsible for a major function must be made aware of this time schedule.

The following example of a time schedule is based on the assumptions that each person will have been notified of his schedule in a written communication and that such information will be available to prepare the operational

explanation for achievement of the plan so that this explanation will be available concurrently with each financial schedule:

Step 1—Notification of necessary information to each participant.

Step 2—Preliminary sales plan.

Step 3—Review of preliminary sales plan.

Step 4—Approve sales plan.

Step 5—Manpower requirements which are the basis for manpower budget.

—Facilities requirements for manufacturing and engineering which are the basis for the capital budget, etc.

—Material requirements for manufacturing or from outside vendors which are the basis for the inventory and purchases budget.

Step 6—Review, revise, approve—Step 5.

Step 7—Manufacturing expense—budgets (including direct labor.)

Step 8—Review, revise, approve—Step 7.

Step 9—Application of manufacturing expense to products.

Step 10—Inventory requirements. Material plus conversion costs.

Step 11—Review, revise, approve—Step 10.

Step 12—Service, distribution, selling, administrative and engineering expense budgets, all including manpower. Each of these budgets will be analyzed and presented from a control viewpoint.

Step 13—Review, revise, approve—Step 12.

Step 14—Other income and expense budget.

Step 15—Review, revise, approve—Step 14.

Step 16—Profit and loss summary of Steps 1 through 15.

Step 17—Review of profit and loss summary.

Step 18—Balance sheet summary.

Step 19—Approve plan.

This type of schedule with dates applied to fit the particular situation will assure the proper communication and coordination necessary to develop a realistic plan whether it be for one year or five years and upward.

### *Measuring Profit Performance*

It is appropriate now to mention the feedback or measurement phase of the

profit planning cycle. Because of the manner in which the plan has been developed it is not only possible but vital to the program that comparison of actual performance versus profit plan be made. This must be done on a responsibility basis and is most effective if those responsible for the program are held responsible for explanation of variations in performance. That is to say, each

**To:** PRESIDENT.
**Date:**
**From:** OPERATING DIVISION MANAGER
**Subject:** REPORT OF (MONTH) OPERATIONS

**Copy to:** CHAIRMAN OF THE BOARD
EXECUTIVE VICE PRESIDENT AND TREASURER
EXECUTIVE VICE PRESIDENT - OPERATIONS
OPERATING VICE PRESIDENT
CONTROLLER

SALES FOR THE MONTH WERE_____; VARIABLE MARGIN,_____;
OPERATING PROFIT,_____; NET PROFIT AFTER TAXES,_____.

**SALES ANALYSIS**

PROFIT PLAN
ACTUAL
% CHANGE

(LIST AND DISCUSS MAJOR VARIANCES FROM FORECAST AND EFFECT ON INCOME FOR THE MONTH.)

**ANALYSIS OF MANUFACTURING AND SERVICE ACTIVITY COSTS**

PROFIT PLAN
ACTUAL
% CHANGE

(LIST AND DISCUSS MAJOR VARIANCES.)

**ANALYSIS OF CAPACITY COSTS**

| | PROFIT PLAN | ACTUAL | % CHANGE |
|---|---|---|---|
| MANUFACTURING AND SERVICE | | | |
| SELLING | | | |
| A & G | | | |
| ENGINEERING | | | |

(MAJOR VARIANCES WITHIN AN EXPENSE GROUP SHOULD BE SET OUT SEPARATELY AND DISCUSSED.)

**YEAR-TO-DATE SUMMARY**

| | PROFIT PLAN | ACTUAL | % CHANGE |
|---|---|---|---|
| SALES | | | |
| VARIABLE MARGIN | | | |
| OPERATING EARNINGS | | | |
| PROFIT BEFORE TAX | | | |
| RETURN ON NET INVESTMENT | | | |

**GENERAL COMMENTS**

BRIEF REVIEW OF CHANGES IN OBJECTIVES, IF ANY; COMMENTS, WHERE APPROPRIATE, ON ORGANIZATION MATTERS, LABOR DEVELOPMENTS, PRODUCT DEVELOPMENT, MANUFACTURING PROGRAMS, ETC.

SUMMARY OF OUTLOOK FOR SUCCEEDING MONTH, NEW ORDERS, BACKLOG AND EVALUATION OF RESULTS YEAR-TO-DATE WITH RESPECT TO THE PROFIT PLAN.

**EXHIBIT 2**

individual having participated in developing his part of the plan must be given the results of his performance against his plan so that he may determine the reasons, favorable or unfavorable, for variance from his plan and determine a corrective means of action. An example of a division manager's report on performance is shown in Exhibit 2.

An example of a consolidated report of performance is shown in Exhibit 3.

## REPORT OF OPERATIONS

MONTH OF _____, 1959

SALES AND EARNINGS ($000)

| | NET SALES $ | | | NET EARNINGS $ | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | MONTH | | | | | | YEAR-TO-DATE | | | |
| | SALES | | | EARNINGS | | | SALES | | EARNINGS | |
| | PROFIT PLAN | ACTUAL | VARIANCE | PROFIT PLAN | ACTUAL | VARIANCE | PROFIT PLAN | ACTUAL | PROFIT PLAN | ACTUAL |
| X DIVISION | | | | | | | | | | |
| Y DIVISION | | | | | | | | | | |
| Z DIVISION | | | | | | | | | | |
| ELIMINATIONS | | | | | | | | | | |
| CONSOLIDATED | | | | | | | | | | |
| EARNINGS PER SHARE | | | | | | | | | | |

SELECTED BALANCE SHEET DATA ($000)

| | CASH | | ADVANCES | | RECEIVABLES | | INVENTORIES | | BACKLOG | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PROFIT PLAN | ACTUAL | PROFIT PLAN | ACTUAL | PROFIT PLAN | ACTUAL | PROFIT PLAN | ACTUAL | AT | INC. (DEC.) VS. |
| X DIVISION | | | | | | | | | | |
| Y DIVISION | | | | | | | | | | |
| Z DIVISION | | | | | | | | | | |
| ELIMINATIONS | | | | | | | | | | |
| CONSOLIDATED | | | | | | | | | | |
| | | | | | | | | | | |

**EXHIBIT 3**

TO:
DATE:
FROM:
SUBJECT: **PROFIT PLAN EXCEPTION REPORT FOR____ QUARTER, 19____**

COPY TO:

| REVENUE AND COST ELEMENTS | PROFIT PLAN YEAR ENDING OCT. 31, 19 | CHANGE | | | CURRENT FORECAST YEAR ENDING OCT. 31, 19 |
|---|---|---|---|---|---|
| | | 2ND QUARTER FORECAST | 3RD QUARTER FORECAST | 4TH QUARTER FORECAST | |
| Net Sales and Service Revenues | | | | | |
| Variable Margin | | | | | |
| % Sales | | | | | |
| Period (Capacity) Costs | | | | | |
| Manufacturing | | | | | |
| Selling | | | | | |
| Administrative and General | | | | | |
| Engineering | | | | | |
| Total Period (Capacity) Costs | | | | | |
| Operating Earnings | | | | | |
| % Sales | | | | | |
| Earnings Before Tax | | | | | |
| % Sales | | | | | |
| Net Earnings | | | | | |
| % Sales | | | | | |

COMMENTS: (EXPLAIN FACTORS GIVING RISE TO CHANGES, INCLUDING PRODUCT MIX, P/V RATIOS, CAPACITY COSTS AND EXTERNAL FACTORS, E.G., MARKET CONDITIONS, ETC., AFFECTING COMPANY'S OPERATIONS.)

**EXHIBIT 4**

| DETAIL OF___ QUARTER FORECAST | | COMPANY OR OPERATING GROUP | | | | | |
|---|---|---|---|---|---|---|---|
| STATEMENT OF EARNINGS FORECAST | ESTIMATED ___ MOS. ENDED | MONTH OF | MONTH OF | MONTH OF | QUARTER ENDING | QUARTER ENDING | TOTAL FISCAL YR. |
| 1 Net Sales and Service Revenue | | | | | | | |
| 2 Variable Cost of Sales | | | | | | | |
| 3 Variable Margin | | | | | | | |
| 4 Period Costs | | | | | | | |
| 32 Total Taxes on Income | | | | | | | |
| 33 Net Earnings | | | | | | | |
| Income Retained at Beginning of Period | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| Income Retained at End of Period | | | | | | | |
| SUPPLEMENTARY INFORMATION | | | | | | | |
| Depreciation and Amortization – Book Basis | | | | | | | |
| Provision for Contingencies | | | | | | | |

**EXHIBIT 5**

These are only two of many methods available for use as measuring devices; however, they do serve to point out that:

1. Planning establishes the goals and determines how best they can be met.
2. Review gauges the success of operations and interprets their results in order to obtain conclusions for possible improvements.

There must be a link between planning and reviewing so that one can benefit from the other. If the results of the review are not channeled back into the planning stage, some of the valuable lessons of experience are lost forever.

### *Updating the Profit Plan*

Although the profit plan must remain fixed for a selected period of time,

| | BALANCE SHEET FORECAST | ESTIMATED END OF CURRENT MONTH | END OF MONTH | END OF MONTH | END OF MONTH | END OF QUARTER | OCT. 31, 19 |
|---|---|---|---|---|---|---|---|
| | ASSETS | | | | | | |
| | Current Assets | | | | | | |
| 1 | Cash | | | | | | |
| 2 | Notes Receivable – Public | | | | | | |
| 3 | Accounts Receivable – Net | | | | | | |
| 4 | Accounts Receivable – Interco. | | | | | | |
| 5 | Inventory – Variable | | | | | | |
| 6 | – Fixed Complement | | | | | | |
| 7 | Total Inventory | | | | | | |
| 8 | | | | | | | |
| 9 | Total Current Assets | | | | | | |
| 10 | | | | | | | |
| 11 | Property, Plant and Equipment | | | | | | |
| 12 | Less Allow. for Depreciation | | | | | | |
| 13 | Net Property | | | | | | |
| 14 | | | | | | | |
| 15 | Intercompany Investments | | | | | | |
| 16 | | | | | | | |
| 17 | Other Assets | | | | | | |
| 18 | | | | | | | |
| 19 | Deferred Charges | | | | | | |
| 20 | | | | | | | |
| 21 | Total Assets | | | | | | |
| | LIABILITIES AND CAPITAL | | | | | | |
| 22 | Current Liabilities | | | | | | |
| | | | | | | | |
| 43 | Total Liabilities and Capital | | | | | | |
| | SUPPLEMENTARY INFORMATION | | | | | | |
| | Capital Expenditures | | | | | | |
| | | | | | | | |
| | Allowance for Doubtful Receivables | | | | | | |
| | Progress Payments Deducted from Inventory | | | | | | |
| | Construction in Progress | | | | | | |
| | | | | | | | |

**EXHIBIT 6**

| BALANCE SHEET ELEMENTS | PROFIT PLAN YEAR ENDING OCT. 31, 19 | CHANGE | | | CURRENT FORECAST YEAR ENDING OCT. 31, 19 |
|---|---|---|---|---|---|
| | | 2ND QUARTER FORECAST | 3RD QUARTER FORECAST | 4TH QUARTER FORECAST | |
| Cash | | | | | |
| Receivables | | | | | |
| Collection Period | | | | | |
| Inventory | | | | | |
| Turnover | | | | | |
| Working Capital | | | | | |
| Capital Expenditures | | | | | |
| Net Plant | | | | | |
| Sales Per $ | | | | | |
| Advances From Dresser | | | | | |
| Invested Capital | | | | | |
| Turnover | | | | | |
| Earnings Before Tax – % Sales | | | | | |
| % Return On Investment | | | | | |

COMMENTS:

**EXHIBIT 7**

the planning function must not become static. The plan must constantly be reviewed and notice taken of all significant changes during the profit plan period. This can be done by intermediate forecasts, either quarterly or semi-annually. Again, these intermediate forecasts must be compared to the original or annual profit plan. This can be done by a comparison of current forecast and annual plan or on an exception basis.

The Exhibits 4 through 7 show not only the actual to-date results of operations but also the monthly estimate for three months in advance, projected for at least two additional quarters. They also show the anticipated changes or variances at the end of each quarter from the original plan.

It should be apparent that one person, or group of selected persons, cannot fulfill the objectives of the profit planning function if left alone. To have a moving, dynamic operational plan it is necessary to have as much participation as possible or profit planning becomes nothing more than an exercise in accounting machinations.

A corporation is dependent upon teamwork. If all the people know their assigned jobs, work together and follow the plans, the chances for success are great. However, if the plans are not followed the likelihood of success is diminished and probability of failure is great.

# Organizing a Forecast and Budget Program—Basic Considerations

by ROBERT F. McMAHON

A TREMENDOUS GROWTH of material in the fields of forecasting and budgeting may be noted in the contemporary accounting literature. This increasing emphasis has developed naturally, in accord with management's growing realization of the need for planned and controlled data and tools for sound and timely decision making. A preponderance of the available literature, however, concerns itself primarily with the how-we-do-it type of approach. Appropriately enough, innumerable accompanying examples and illustrative data are presented to the reader for consideration of its applicability to his requirements or situation. Some of it may apply but, generally, most of it does not.

It is with these thoughts in mind that the writer has attempted, here, to develop a manageable blueprint of organizing for forecasting and budgeting. The emphasis, by definition, will be on organization rather than on implementation, although they will necessarily overlap to a certain extent.

## Responsibility for Forecasting and Budgeting

It has been increasingly popular to talk and write about the necessity of "selling" other company executives and management on the need for good forecast and budget programs. Too often this philosophy has been implemented as a sales job on middle and lower management personnel without the all important previous selling of top management. Such an approach may prove to be the most difficult method of introducing the program. Indeed, the program may be doomed to failure before it can demonstrate its benefits, because of the natural reaction of operating personnel to change, additional paperwork and procedures that appear to conflict with their primary task of "getting the work out." It is certainly the task of the finance function to "sell" top management (the chief executive) on the need for and benefits of a forecast and budget program. Once this has been accomplished it is primarily the chief executive's job to introduce it to other key personnel as a program blessed with the complete backing of top management.

---

**ROBERT F. McMAHON**, Pomona Valley Chapter (Los Angeles, 1953), is Assistant to the Vice President and Group Manager, Litton Industries Components Group, Los Angeles, California. Previously, he was Division Controller with the Marquardt Corp., Pomona Div. Mr. McMahon was graduated from University of California at Los Angeles (UCLA) with a B.S. degree. He is Past President of the Pomona Valley Chapter. Mr. McMahon contributed previously to the *N.A.A. Bulletin*.

When the program has been "sold" to top management, the chief financial executive should be delegated the responsibility for designing, installing, coordinating and administering it. Depending on the size of the company, the function should be set up as a separate group or one-man responsibility, reporting to the chief financial executive, in order to attain the concentration and backing required, and avoid conflict with other accounting functions. Except, perhaps, in the smallest companies, a commitment to a well-rounded and complete forecast and budget program will provide more than enough work to justify its responsibility as that of at least a single person's. If personnel are properly selected, the cost should be more than offset by the savings effected through installation of the program.

Selection of proper key-personnel to man the development, installation and administration of the program is of extreme importance to its successful accomplishment. A check list of qualifications may best illustrate the capabilities required to optimize the performance of the function. Forecast and budget function personnel should have:

1. Good background in accounting theory and practice and an intimate knowledge of the general and cost accounting system detail and operation.
2. An intimate knowledge of company organization and operations.
3. The ability to immediately recognize the effects of external and internal operating occurrences on the current forecast or budget as well as above average analytical ability.
4. The ability to write well and to explain in laymen's terms, without dependence on the use of accounting jargon.

As described, the competence required accords the forecasts and budget function the highest level in the entire finance function.

### *Coordinating the Subject Matter of Forecasts and Budgets*

The first step should be the analysis of company organization and operations. The primary objective of such analysis is the determination and definition of logical organization, consistent with the demands of the company's operations, compatible with sound accounting distribution and allocation procedures. Examples are intentionally excluded, here, as the finished product should reflect the character and idiosyncrasies of the company under study. Any attempt to force the company's operations into an inconsistent organizational structure, merely because it is used by some other company, will result in confusion, inefficiency, and an abortive forecast and budget program. However, reference may be made

to several excellent works on the principles of sound organization structure for assistance in determining the unique and proper structure required.

Upon completing the organization analysis phase, a coding system may be devised to numerically identify each level of the organization at which costs are to be identified. Proper coding is an absolute necessity where tabulating equipment will be used as a medium for producing reports. It is important to note that only the minimum number of digits required should be used to eliminate unnecessary and costly summarization, whether mechanical or manual methods are utilized.

When constructing the coding system, the digits should be assigned by working from the general to the specific, that is, from the summary level to the detail. A separate digit, or pair, should be assigned to each organizational unit for which cost information is desired. For certain major organizational units costs may be desired at only one level while within other units they may be desired for several levels. A partial example of a comprehensive coding structure would be as follows:

| *Organizational Unit* | *Code* |
|---|---|
| General manager's office | 01-00-00 |
| Industrial relations division | 02-00-00 |
| Division manager's office | 02-10-00 |
| Personnel department | 02-20-00 |
| Group insurance section | 02-21-00 |
| Group insurance claims group | 02-21-10 |
| Manufacturing division | 14-00-00 |
| Aircraft manufacturing department | 14-30-00 |
| Assembly section | 14-38-00 |
| Wing assembly group | 14-38-20 |
| Aileron center | 14-38-23 |

In the example both single digits and pairs are used to identify significant levels. In this case identification is as shown on Exhibit 1.

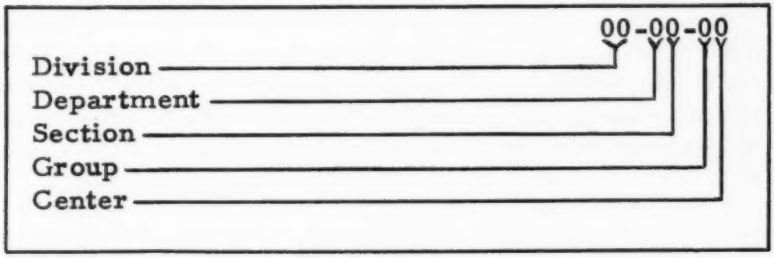



**EXHIBIT 1**

The extent of coding may be expanded or contracted to suit the company under study but, again, only the minimum number of levels that will serve a useful purpose should be assigned.

Accounting practices and procedures must also be analyzed to determine their efficiency and compatibility with operations. While this is especially true of the direct cost and expense detail, the balance sheet and nominal accounts should not be neglected; they should be examined and redefined, if necessary, to provide logical and compact summarization. As with company organization coding, the accounts should be numerically identified from the summary to the detail, using as few digits as required to accomplish desired identification.

The cost system should be examined to determine its ability to logically collect costs by type of job, product or process, as applicable. Elements of cost (labor, material, overhead applied, etc.) should be identified in accordance with the relative importance of expenditures. A properly constructed cost system coding will expedite the forecasting of direct costs required for projected work in process input, finished goods and/or costing of sales.

Expense accounts, too, should be analyzed to determine their adequacy for identifying significant fixed, variable and semi-variable or semi-fixed costs. Considering the usual extent of overhead analysis and desired control, it is extremely important for these accounts to be properly identified and coded. In view of the fact that each significant level of organization, assigned a code to identify its costs, will be multiplied by the number of expense accounts it may use, it is clear that the expense detail for collection and analytical purposes may grow to tremendous proportions if not properly controlled. Accordingly, only significant or diverse expenses should warrant separate account coding. To further expedite the jobs of forecasting and performance analysis, similar expense accounts may be categorized. Such categorization permits true management analysis by exception. First, identifying the categories of expense that are significantly at variance with the budget and, second, narrowing down to the specific offending accounts.

Expense account coding should be used in conjunction with the organization codes. Where separate organization codes have been assigned, it is not necessary to effect duplication in the expense accounts. If, for example, the expense account for supervisory labor is designated as account 01, the distinction between the group insurance section and assembly section would be numerically recorded as:

| *Description* | *Organization Code* | *Expense Account* |
|---|---|---|
| Group insurance section—Supervisory labor | 02-21-00 | 01 |
| Assembly section—Supervisory labor | 14-38-00 | 01 |

It is clearly unnecessary to issue separate account numbers for the same expense item in differently coded organizational units.

The final step in coordinating the subject matter of forecasts and budgets is the examination of accounting distribution and allocation procedures. These, too, should be made compatible with the company organization coding system. The detail of distribution and allocation should not go beyond the significant levels of organization identified for budgetary purposes. If, however, there is a specific productive reason for distributing costs to the lower level, it may be done and then, when summarizing, eliminated from the performance reports issued for the budgeted level. Allocation of expenses of service units to operating units or burden centers should be analyzed, determined and fixed in the proper sequence. The primary point is to define the allocation procedure to ensure consistency of application.

The foregoing recommended analysis of the company organization and accounting system with its objective of defining and coding, is necessary to ensure consistency of data recording and, therefore, more meaningful forecasts and budgets. If possible, each of the points described should be reduced to writing as part of an organization or accounting manual, and distributed in such a manner as to ensure receipt by those who must work with any part of the program. The degree of consistency thus attained will assist in the elimination of "system created" variances. This, in turn, will eliminate the frustration experienced by management and budget analysts who, otherwise, may have to attempt to separate variances created by operating conditions from those created by the system.

### *Developing Forms and Instructions*

Generally, in a medium to large sized firm the construction of the forecast is participated in by many people, the great majority of whom may have little or no knowledge of forecasting, budgeting and accounting. In order to eliminate individual interpretation concerning the data requested of them, it is highly desirable to design and print forms which, if well designed, will save many man-hours at the time the material is being summarized. Also, where many forms and extensive detail are required, the forms may be coded for processing on tabulating equipment. This suggestion may often be used profitably even where tabulating equipment may not be available in the company; tabulating service centers are widely available and will provide their services on an hourly or job basis. Forms should be provided for each significant part of the forecast. They should include the forms required for the budget function as well as those to be completed by other functions of the company. Very often, while forms are provided

for other functions, some budget functions rely on summarizing on columnar worksheets. Much time may be lost in the repetitive task of writing in standard column headings and descriptive detail. Time may be saved, when most needed, by providing forms.

The two basic forms from which all other forms emanate are, of course, the projected balance sheet and profit and loss statement. Some other forms that may be useful, are: summary of expense categories forecast, projection of cash requirements, statement of source and application of funds, projected manpower requirements, projected material requirements, project or job forecast, projection of capital (fixed asset) requirements, etc. It should be noted that the above suggestions are not intended to supply an exhaustive list. Each company must determine the forms it can profitably use for constructing and examining its forecasts.

Forms should also be developed for budget distribution and performance reporting. These will be easily determined when a complete set of required forecast forms has been developed. Because of the natural relationship of forecasting to budgeting, the definition of forms for the former dictates those required for the latter. However, it may be determined that greater detail is required for construction of the forecast than is necessary for adequate budget distribution and reporting.

Statistical calculation forms should be considered for inclusion in the forecast form package. Examples of these are forms for calculating average hourly wages or average productive work weeks for labor dollar forecasting. The average hourly wage calculation form, for instance, would provide for the effect of general and merit wage increases and the possible change in "mix" of labor classifications during the period being forecast. The average productive work week calculation form may provide for the varying effects of vacations, holidays, sick leave and other interrupting influences affecting productive labor hours. Each form would, of course, be tailored to include all influencing factors affecting the company's wages or hours. The neglect of this detail can result in the unnecessary expenditure of valuable time, later, when analysis of budget versus actual performance is being conducted.

Detailed written instructions should be provided to all personnel expected to participate in the construction of the forecast. Every form should have its accompanying (printed on the reverse side, if possible) instructions which define what is required in every column, line and box contained on the form. Nothing should be left to the imagination or interpretation of the individual. Again, this approach will result in great savings of time by eliminating the need for a multiplicity of questions while the forms are being completed, and rework after the

forms are submitted. The instructions should include the sequence in which the forms should be prepared. While this may seem obvious to the personnel of the forecast and budget function, it may not be so to personnel of other functions. In addition, a brief explanation of the purpose of each form should be included to ensure understanding of the desired objectives.

### *Establishing the List of Assumptions*

The keystone of any individual forecast is the list of "assumptions" on which it is based. Neither the forecast nor the resulting budget is any better than the assumptions behind it. Because of the serious ramifications and possible compounding effects of erroneous assumptions, great care must be exercised in their establishment for a new forecast. No list of fixed assumptions may intelligently be developed for all companies. Each company must develop its own assumptions and these, of course, must be reviewed and amended, as necessary, when embarking on each new forecast. Historical data will provide much of the material required for establishing many of the assumptions, especially those which are mechanical in nature. Other assumptions will, of course, have to be provided by judgment and estimate. All assumptions should be recorded to ensure their availability for later variance analyses.

For illustrative purposes only, following is a partial list of items for which assumptions must be made, together with some influencing factors:

Sales—firm vs. potential product mix, C.P.F.F. vs. fixed price, time lag between booking the order and the sale, basis for potential sales, i.e. sales function estimates versus anticipated manpower growth and utilization.

*Profit*—by job or product, type of sale, amount attributable to prior year adjustments.

*Manpower*—anticipated ratio of direct to indirect, anticipated productive utilization of direct manpower versus time charged to overhead.

*Average wage and salary rates*—effect of labor negotiations, merit increases, general increases, employee turnover, changes in "mix" of types of employees.

*Direct productive hours*—effect of vacations, sick leave, holidays, idle time, personal business, coffee breaks.

*Overhead*—effect of varying absorption policies and rates, disposition of over or under-absorption.

*Cash receipts and disbursements*—time lag between booking sale and receipt of cash, progress payments, time schedule of disbursements by type, etc.

### *Setting Up the Time Schedule*

The foregoing material makes obvious the fact that any comprehensive forecast and budget program involves a substantial amount of time. The extent of detail required and the sequence in which it must be handled demands that a detailed time schedule be developed to ensure that completion and interim dates are met. Generally, the schedule must be kept tight in order to narrow the time span between the forecast "kick-off" date and the beginning of the period being forecast. Naturally, the lengthening of the span of time between these two dates results in less accuracy.

The time schedule should be highly detailed and be specific regarding due dates and responsibilities. Once established, no excuse should be accepted for changing the due dates; if the schedule is tight, any slip in schedule will necessarily have to be made up by some other function later in the schedule. If any grace period is to be allowed it should be built into the schedule and not publicized. Publication of a grace period will inevitably result in its being used

Executive Bulletin

To: Division Heads, Department Heads, Foremen, and Supervisors

Bulletin No.: 44 (Rev.)
Page 1 of 4

Subject: Time Schedule for Budget Preparation and Review

Date: April 5, 1960

Supersedes Executive Bulletin No. 44, Dated 4/3/59
Executive Bulletin No. 44, Supplement 1, Dated 6/16/59

The attached Budget Time Schedule covers budget forecasts for the third and fourth quarters of 1960 and the first quarter of 1961.

The third quarter 1960 forecast will cover all budget requirements, i.e. project, manpower, material, expense (including special jobs and rearrangements), and capital, for the period of June 1, 1960 through June 30, 1961.

The fourth quarter forecast will consist of a forecast revision of capital and special jobs and rearrangements for the nine-month period from October 1, 1960 through June 30, 1961.

The first quarter 1961 forecast will again cover all budget requirements for the period beginning December 1, 1960 through December 31, 1961.

It is imperative that the due dates listed on the Budget Time Schedule be met and the forecast instructions be followed if the company material, budgetary and financial programming objectives are to be attained. Deviations from this schedule are to be submitted to the Executive Vice President for approval.

Executive Vice President

**EXHIBIT 2**

at the earliest opportunity. Top management should issue the schedule in order to ensure compliance (Exhibit 2). Any deviation from the schedule that is not immediately resolved should be reported to top management so that timely corrective action may be taken.

When constructing the schedule the "D" day approach should be used. The date that the budgets are to be issued to each budgeted organization should be defined. It then serves as the end date from which all other preceding due dates are determined. Working backward, each date and responsibility should be determined for approval meetings, review meetings, data submission, interorganization coordination, etc., back to the forecast starting date, as shown on Exhibit 3.

### *Designing Performance Reporting*

A complete forecast and budget program includes statistical and analytical reports to top management, and supervisory personnel of budgeted organizational units. The primary purpose of these reports is to inform responsible parties of their success or failure in meeting budget goals. Accordingly, they should be only as detailed as necessary to highlight performance and to indicate areas in which corrective action may be needed. All detail which does not serve the primary purpose should be eliminated.

Statistical reports, necessarily, will be the most detailed. These should show, for the activity being reported, the budget, actual and variance data for the current period and the budget period to date, e.g., six months or one year. These reports, together with the forecast assumptions, provide the raw material for analysis and analytical reports.

Analytical reports should concentrate on significant variances, the reasons for them, and their effect on budget goals. In addition, they should separate and eliminate from primary consideration those variances which are mechanical in nature, that is, created by the accounting system or procedures. Significant variances attributable to company operations should be highlighted and analyzed, until the basic reason is discovered. For example, it may be noted that actual labor dollars exceeded the budget. Examination may show the reason to be excessive manpower. However, to stop at that point would not get us to the core of the problem. Additional investigation may reveal that a customer had an urgent reason for stepping up the delivery schedule and this could only be met by adding manpower. Nothing is more frustrating than to read the same material in so-called analytical reports that is available in statistical reports. Good variance analysis tests the capability of budget analysts and reveals those who

**EXHIBIT 3**

Budget Time Schedule for 3rd and 4th Qtrs., 1960 and 1st. Qtr., 1961

| Step | Description | Responsibility | 3rd quarter forecast for period 6/1/60 to 6/30/61 Due Dates | 4th quarter forecast for period 10/1/60 to 6/30/61 Due Dates | 1st quarter forecast for period 12/1/60 to 12/30/61 Due Dates |
|---|---|---|---|---|---|
| 1. | Preparation of master delivery schedule | Master scheduling | Mon. 2/15 | Tues. 9/17 | Tues. 8/16 |
| 2. | Publication of master unit delivery and planning schedules | Mfg. divisions & master scheduling | Wed. 3/2 | Thurs. 6/2 | Thurs. 9/1 |
| 3. | Distribution of forecast forms and instructions | Controller's division | Wed. 3/2 | Thurs. 6/2 | Thurs. 9/1 |
| 4. | Submission of preliminary estimates of manpower and material requirements to the controller's division | All divisions | Wed. 3/9 | | Thurs. 9/8 |
| 5. | Transmission of preliminary operating manpower and material estimates to div. 05 and23, 07-08, 07-09 & 07-20 | Controller's division | Fri. 3/11 | | Mon. 9/12 |
| 6. | Submission of detailed material requirements to the material department | 3 R & D div's. div. 08, 16, 24 & 44 | Wed. 3/23 | | Thurs. 9/22 |
| 7a. | Submission of work requests for capital construction and special jobs and rearrangements to plant engineering for pricing and determination of scope of work. (To be received by P. E. as of this date but preferably before.) | All divisions | Mon. 3/28 | Tues. 6/28 | Tues. 9/27 |
| 7b. | Submission of automotive requirements to traffic section material department for evaluation and incorporation into company automotive and transportation requirements | All divisions | Mon. 3/28 | Tues. 6/28 | Tues. 9/27 |
| 8. | Submission of completed forecasts, except capital and special jobs and rearrangements, to the controller's division | All divisions | Mon. 3 | | Fri. 10/14 |
| 9. | Return, to the divisions, of priced capital and special jobs and rearrangement work requests | Plant engineering | Mon. 4/18 | Tues. 7/19 | Tues. 10/18 |
| 10. | Completion of material rescheduling | Material department | Tues. 4/26 | | Wed. 10/26 |

**EXHIBIT 3 (Cont'd)**

Budget Time Schedule for 3rd and 4th Qtrs., 1960 and 1st Qtr., 1961

| Step | Description | Responsibility | 3rd quarter forecast for period 6/1/60 to 6/30/61 Due Dates | 4th quarter forecast for period 10/1/60 to 6/30/61 Due Dates | 1st quarter forecast for period 12/1/60 to 12/30/61 Due Dates |
|---|---|---|---|---|---|
| 11. | Review of work requests for capital construction and special jobs and rearrangements to determine capital and/or expense classification and potential space allocation problems. | (3) R. & D. divisions | Wed. 4/20 | Thurs. 7/21 | Thurs. 10/20 |
| | | Division 08 and 16 | Thurs. 4/21 | Fri. 7/22 | Fri. 10/21 |
| | | Division 23, 24 and 01-50 | Fri. 4/22 | Mon. 7/25 | Mon. 10/24 |
| | | Division 03, 05 and 44 | Mon. 4/25 | Tues. 7/26 | Tues. 10/25 |
| | | Admin. division, 01-11, 01-60, 01-30, 02 and 07-09 | Tues. 4/26 | Wed. 7/27 | Wed. 10/26 |
| 12a. | Submission of completed forecasts, including project manpower, material, expense (including special jobs and rearrangements and capital forecasts, to the controller's division | All divisions | Thurs. 4/28 | | |
| 12b. | Submission of capital budgets and special jobs and rearrangements budgets to the controller's division | All divisions | | Fri 7/29 | Fri. 10/28 |
| 13. | Completion of the consolidation and analysis of capital and overhead budgets in preparation for the finance subcommittee meetings | Controller's division | Wed. 5/11 | Thurs. 8/11 | Thurs. 11/10 |
| 14. | Review of budget forecasts (capital, overhead, maintenance and manpower) by the finance subcommittee | Admin. division, 01-11, 01-30, 01-60, 02, 07-09 | Thurs. 5/12 | Fri. 8/12 | Fri. 11/11 |
| | | (3) R.&D. divisions | Fri. 5/13 | Mon. 8/15 | Mon. 11/14 |
| | | Divisions 08 and 16 | Mon. 5/16 | Tues. 8/16 | Tues. 11/15 |
| | | Divisions 23 and 24 | Tues. 5/17 | Wed. 8/17 | Wed. 11/16 |
| | | Divisions 44 and Tucson | Wed. 5/18 | Thurs. 8/18 | Thurs. 11/17 |
| | | Divisions 03 and 05, 01-50 | Thurs. 5/19 | Fri. 8/19 | Fri. 11/18 |
| 15. | Completion of budget forecasts for review by the finance committee | Controller's division | Fri. 5/27 | Mon. 8/29 | Tues. 11/29 |
| 16. | Review and approval of the budget forecasts by the finance committee | Finance committee | Tues. 5/31 | Tues. 8/30 | Wed. 11/30 |
| 17. | A consolidation of material for the financial budgets | Controller's division | Tues. 6/28 | Wed. 9/28 | Thurs. 12/29 |
| 18. | Submission of the financial budget to the finance committee | Controller's division | Wed. 6/29 | Thurs. 9/29 | Fri. 12/30 |

are properly qualified. Weakness in this area should be eliminated as rapidly as possible through training or replacement as the situation warrants.

With the forecast and budget program installed and operating, flash reports are possible and desirable. These are brief interim reports issued immediately after the close of the accounting period in order to communicate key information to management without waiting for the formal statements. Constant analysis of budget performance permits the estimating of actual performance to attain a high degree of accuracy. Flash reporting is based on the concept that ninety-percent accuracy on time is better than one-hundred-percent accuracy too late. With much of the actual data available at the end of the period, it is possible for good analysts to achieve better than ninety-percent accuracy without waiting for the formal financial statements. It is submitted that the role of proper flash and performance reports is far more important in the effort to maximize profits than that of the formal statements. If these reports generate the action required to successfully control operations consistent with the budget goals then the formal statements will obviously reflect the desired results.

When designing performance reports, consideration should be given to the people who will receive them. The format should conform not to the likes and dislikes of budget function personnel but, rather, to those of the executives who are expected to absorb and act on the basis of the information provided. Accordingly, engineering managers may prefer hours rather than columnar listings of labor dollars. These managers should be canvassed to determine their preferences and, if possible, they should be satisfied. Finally, statistical "gobbledygook" should be avoided when writing analyses. Straightforward and simple statements of fact will prove to be highly acceptable and appreciated by those who receive the reports.

### Conclusion

As noted earlier, the foregoing material is not necessarily applicable, in its entirety, to all companies. Some points may be validly used by one company and not by another. It is believed that if the foregoing material is used as no more than a check-list, it will assist in the development of a personalized forecast and budget program.

Careful organizing for forecasts and budgets will prove fruitful by:

1. Providing management with more accurate and effective information.
2. Saving thousands of manhours, in the long run, in the preparation, reporting and analysis of forecasts and budgets.

# A Case Study in Budgetary Planning and Control

by CARL D. CRANKSHAW

ONE OF THE MOST DIFFICULT tasks of a manager is to control costs when there are large swings in volume of production and sales. The Tapco Group of Thompson-Ramo-Wooldridge, Inc., has experienced wide swings in volume over the last two years. This situation has resulted in the development of a coordinated system of budgetary planning and control.

This article is a case study of the control mechanics of the Tapco Group and, prior to its existence, the Jet Division. Primarily, we manufacture jet engine, missile and electronic components which are sold to aircraft and missile prime contractors. Production varies from extremely high tolerance machinery work to assembly work of all types and degrees of complication.

The Tapco Group is a fairly large operation with approximately 10,000 employees. To cope with the large number of problems, our organization was decentralized as far as possible, so that decision-making could be accomplished at the lowest possible organizational level. This action gave us eight independent works. The organization and control mechanics have been tailored to allow for maximum decentralization of authority and responsibility. However, accountability for financial planning and cost control has been carefully maintained at Group level. Since we are associated with the defense industry, our sales volume and products change frequently. We have become accustomed to the fact that these product and volume fluctuations are a natural "way of life." Our management has recognized the limitations imposed by such volume swings on any control mechanism, so the system has been designed to highlight the maximum number of potential deficiencies—both before and after the fact.

Our budgetary planning and control consists of five separate mechanics.

Long-range forecasts.
Short-range forecasts.
Expenditure control program.
System of budgetary control.
Cost reduction programs.

Each of these items is closely interrelated and success has been achieved only through their combined use. Let us examine them closely.

---

**CARL D. CRANKSHAW**, Cleveland Chapter, 1957, is Cost and Financial Analyst on the Tapco Group Staff of Thompson-Damo-Wooldridge, Inc., Cleveland, Ohio. A graduate of Cornell University with a B.A. degree in Economics, Mr. Crankshaw is presently working to an M.B.A. degree in Accounting.

**EXHIBIT 1**

**OPERATING FORECAST — No._____** (IN 000'S)

TYPO-LITHO REV. PRINTED IN U.S.A.

TAFCO GROUP

DIVISION

DATE

| OPERATIONS | 1960 Jan. | Feb. | Mar. | 1 Qtr. | 2 Qtr. | 3 Qtr. | 4 Qtr. | Total | 1961 1 Qtr. | 2 Qtr. | 3 Qtr. | 4 Qtr. | Total | 1962 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NET SALES AND TRANSFERS: | | | | | | | | | | | | | | |
| AIRCRAFT—ORIGINAL | | | | | | | | | | | | | | |
| AUTOMOTIVE—ORIGINAL EQUIPMENT | | | | | | | | | | | | | | |
| AUTOMOTIVE—REPLACEMENT | | | | | | | | | | | | | | |
| ELECTRONICS AND MISSILE | | | | | | | | | | | | | | |
| UNCLASSIFIED | | | | | | | | | | | | | | |
| TOTAL CUSTOMERS | | | | | | | | | | | | | | |
| AFFILIATES AND INTER-PLANT | | | | | | | | | | | | | | |
| TOTAL SALES AND TRANSFERS | | | | | | | | | | | | | | |
| DIVISION PROFIT: | | | | | | | | | | | | | | |
| CUSTOMERS | | | | | | | | | | | | | | |
| AFFILIATES AND INTER-PLANT | | | | | | | | | | | | | | |
| TOTAL DIVISION PROFIT | | | | | | | | | | | | | | |
| % to *Total Sales and Transfers* | | | | | | | | | | | | | | |
| RETURN ON INVESTMENT (ANNUAL BASIS) | | | | | | | | | | | | | | |
| AVERAGE INVESTMENT | | | | | | | | | | | | | | |
| TURNOVER | | | | | | | | | | | | | | |
| % *Division Profit to Investment* | | | | | | | | | | | | | | |
| INVENTORIES | | | | | | | | | | | | | | |
| RAW MATERIAL | | | | | | | | | | | | | | |
| WORK-IN-PROCESS | | | | | | | | | | | | | | |
| FINISHED GOODS | | | | | | | | | | | | | | |
| SUPPLIES | | | | | | | | | | | | | | |
| TOTAL OPERATING INVENTORIES | | | | | | | | | | | | | | |
| OTHER INVENTORIES AND/OR (ALLOWANCE) | | | | | | | | | | | | | | |
| TOTAL INVENTORIES | | | | | | | | | | | | | | |
| DAYS SUPPLY — OPERATING ONLY | | | | | | | | | | | | | | |
| CAPITAL EXPENDITURES | | | | | | | | | | | | | | |
| CURRENT APPROVED APPROPRIATION | | | | | | | | | | | | | | |
| DEFERRED PROJECTS | | | | | | | | | | | | | | |
| ANTICIPATED FUTURE REQUIREMENTS | | | | | | | | | | | | | | |
| TOTAL CAPITAL EXPENDITURES | | | | | | | | | | | | | | |
| SUBJECT BUSINESS INCLUDED ABOVE | | | | | | | | | | | | | | |
| CUSTOMER SALES | | | | | | | | | | | | | | |
| DIVISION PROFIT | | | | | | | | | | | | | | |

### *Long-Range Forecast*

The long-range forecast is a three-year projection of sales, profits and balance sheet items. The detailed background information is compiled by the production planning and sales departments, giving data by part number or component. Exhibits 1 and 2 show the forms recommended for presentation of the forecast information. Note the breakdown of periods of time: first quarter by month, next year and three-quarters by quarter, and final year annual total only.

**COMPUTATION OF INVESTMENT – FORECAST No.** ..... TAPCO GROUP

TPFC-10628 Rev. PRINTED IN U.S.A. DIVISION DATE

| | ACTUAL | FORECAST 1961 | | | | 1962 Total |
|---|---|---|---|---|---|---|
| WORKING CAPITAL | | | | | | |
| CURRENT ASSETS | | | | | | |
| CASH | | | | | | |
| NOTES & ACCOUNTS RECEIVABLE—NET | | | | | | |
| INVENTORIES – NET | | | | | | |
| INTER DIVISION OPEN ACCOUNTS | | | | | | |
| OTHER CURRENT ASSETS | | | | | | |
| TOTAL CURRENT ASSETS | | | | | | |
| LESS CURRENT LIABILITIES: | | | | | | |
| ACCOUNTS PAYABLE – TRADE | | | | | | |
| ACCRUED SALARIES AND WAGES | | | | | | |
| OTHER ACCRUALS | | | | | | |
| INTER DIVISION OPEN ACCOUNTS | | | | | | |
| TOTAL CURRENT LIABILITIES | | | | | | |
| WORKING CAPITAL – NET | | | | | | |
| PROPERTY, PLANT AND EQUIPMENT—NET | | | | | | |
| OTHER ASSETS | | | | | | |
| TOTAL INVESTMENT – END OF PERIOD | | | | | | |
| AVERAGE INVESTMENT | | | | | | |

COMPUTATION OF AVERAGE INVESTMENT

**EXHIBIT 2**

Behind this summary form are detailed schedules presenting analyses of the forecast in five different areas:

1. Sales volume in dollars—summarized by customer and also by works which will make the part.
2. Standard direct labor by works—to ascertain broad labor requirements, so that plans can be made to transfer jobs between works, establish or consolidate works, etc.
3. Machine load schedules—to prevent bottleneck operations.
4. Analysis of the profit of price reductions promised or under negotiation.
5. Schedules examining investments in inventories, receivables and other working capital.

### Short-Range Forecast

A three-month forecast prepared every month by the production control and production planning departments details sales by part number of component. Factory floor supervision and production control approve these schedules. In effect, they acknowledge the schedule and promise delivery. At this point, it is the responsibility of these people to ensure that materials or tooling is available when needed. If problems arise, they must notify the interested party so that a timely action can be taken to protect our customer relations.

Through this forecast, each month of the year is forecast three times:

1. At the end of December we forecast January, February and *March*.
2. At the end of January we forecast February, *March* and April.
3. At the end of February we forecast *March*, April and May.

So we can compare our plans three times and determine reasons for changes and the magnitude of any changes between those forecasts. These projections are used not only to forecast sales volume but also manpower and profits. Combining the planning of sales, manpower and profits enables management to take effective action before unfavorable situations occur.

### Expenditure Control

Expenditure control is exercised before the fact. Each of our works has designated certain levels of responsibility required to authorize expenditures for tools, supplies and personnel (hourly and salaried). Purchase or salary personnel requisitions flow through control points in the accounting or industrial engineering departments, to ensure that the proper authority has approved the request

before the requisition is installed. Therefore, the person who has the "know-how" is the man who really authorizes the expenditure. Comparisons are made monthly to ensure that expenditures do not exceed predetermined allowances.

### *System of Budgetary Control*

Annually, we prepare new budgets and standard costs. The budget structure is conformed to our organization which is clearly designed as to responsibility and authority. The systems and procedures of the accounting departments are oriented so that costs can be developed according to areas of responsibility, and performance reported both by department and responsible individuals at higher levels.

The budgets are constructed in a normal fashion, but there are two principles which may be rather unusual. First, budgeted fixed expenses are relatively small so the budgets are, consequently, highly variable. With a highly variable budget, if the volume falls off, the budget authorization drops almost proportionately. Frequently, performance reports based upon these budgets do not have a favorable appearance but, at least, the manager responsible is made aware of the profit effect of the volume decrease and given an early warning to do something about it if the volume level does not show improvement within a reasonable time period. He can make progressive reductions as the volume drops, rather than catch up by 10 or 15 percent cutbacks. Secondly, budgets are expected to be high-leveled, not necessarily attainable but yet not completely out of reach. The new budgets are made tight enough, as compared to the current budgets and recent actuals, so there is room left for improvement. For example, the new budgets applied against recent months' actuals show a performance of 90 percent or lower. The difference, i.e., 10 percent, is the "room for improvement." Works management people are encouraged to set high-task budgets for themselves.

Monthly, we have an operating review meeting at which current operations are presented to the top management. The meeting is conducted by the vice president and manager of the group. Each of the eight works managers brings along two to five of his top people. Staff managers and their people also attend. Through the use of graphs, the group manager summarizes the results of the previous month and relates the future of the group as he sees it currently. The entire meeting takes only 1 to 1¼ hours, so only major considerations are discussed. More difficult problems are resolved in subsequent smaller sessions. Credit is given to a works manager and his staff for a job well done. Comments on noncontrollable items and allocated expenses are de-emphasized at

the meeting because first line supervision is incapable of changing performances on these costs. The noncontrollable expenses which represent only 15 percent of the total direct labor, manufacturing overhead and production scrap costs, are watched on a study basis, while the operating supervisor is guided to those expenses on which he can be gainfully employed. Performance to budget for the controllable items of expense is shown by charts presented at the meeting, one of which is depicted in Exhibit 3. The actual dollars spent are shown in

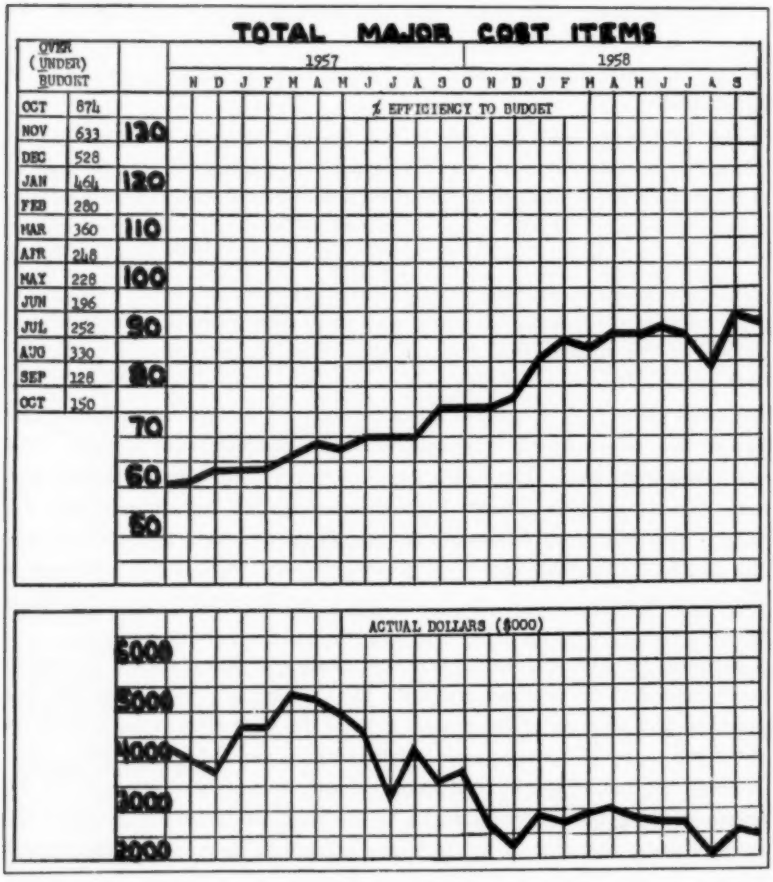



**EXHIBIT 3**

thousands of dollars at the bottom. This shows the rate of change in volume. The top portion of the chart shows percentage performance to budget. It can be seen that the efficiencies do not move with any consistency. There are peaks and valleys. We do not attempt to measure deviations from a known base. Improvement or lack of improvement over a period of several months is the point of observation. The specific percentages, as such, are not significant. Trends are watched closely—not monthly figures, except as indicators of new trends.

The chart of accounts has been combined into categories of similar costs called major cost items in order to keep the number of items to be watched at a reasonable level. For example, twelve indirect labor accounts have been consolidated into one total. Similar action has been taken for supplies, etc. Charts have been constructed for each of these categories, for each of the works in the group. There are roughly 100 charts of which 30 or 40 selected charts are shown each month. Charts are shown on items that are causing trouble or on which exceptional performance is being displayed. Management has impressed upon their people that these charts are used by the group manager as a measure of their performance.

Another method of portraying performance is through a Budget Efficiency Report (Exhibit 4). This report expresses the efficiency by comparing the performance, by major cost item and works, to budget of the current month, the previous three months and the budget year-to-date. We circle the efficiencies if the performance in the current month is below the three month average. An asterisk is placed in front of the figures if the current performance is below the budget year-to-date. The report is reviewed in the operating review meetings with emphasis placed on areas of unfavorable performance. The initiative is placed in each manager's hands to make sure that his performance improves each month.

Since a large portion of the costs is direct labor, extra care must be taken in its measurements and control. In addition, the overhead budgets have standard direct labor hours as their volume criteria. Therefore, it is doubly important to ascertain that the base is consistent. We have standard routings which are the basis of the generation of standard direct labor hours. These routings are subject to changes as methods or engineering changes require.

For reports to floor supervision, we compute performance to these current direct labor standards. But labor costs are the result of not only the efforts of line supervision, but also enginering and methods personnel. To get an appreciation of their combined efforts to reduce direct labor costs, we also report performance against "frozen" direct labor standards. Let us explore this point further.

Note: Circles indicate current month performance below three-month average.

**Budget Efficiency Report**

Note: Asterisks indicate current month performance below year to-date.

| %Efficiency to Budget | Works A | Works B | Works G | Total |
|---|---|---|---|---|
| Direct labor | 86 | 76 | 85 | 86 |
| | 81 | 75 | 71 | 82 |
| | 81 | 74 | 73 | 81 |
| Indirect labor | 59 | 92 | 99 | 83 |
| | 58 | 72 | 82 | 79 |
| | 54 | 70 | 80 | 75 |
| Overtime | *(10) | *(3) | 0 | 27 |
| | (15) | (4) | 0 | 26 |
| | (11) | (6) | 0 | 24 |
| Supplies | *(34) | *(92) | 126 | (88) |
| | (100) | (128) | 114 | (97) |
| | (88) | (100) | 113 | (88) |
| Maint. of equip. | 116 | 85 | *(68) | 100 |
| | 107 | 67 | (75) | 83 |
| | 106 | 70 | (79) | (82) |
| Maint. of tooling | 84 | 72 | 117 | (81) |
| | 80 | 61 | 98 | (83) |
| | 83 | 62 | 85 | (76) |
| New tooling | 112 | 150 | 200 | 127 |
| | 55 | 103 | 144 | 87 |
| | 72 | 125 | 126 | 94 |
| Scrap | *50 | 53 | 86 | 86 |
| | 47 | 24 | 54 | 54 |
| | 54 | 48 | 67 | 67 |
| Salary | 80 | 77 | 108 | 103 |
| | 75 | 70 | 94 | 87 |
| | 74 | 73 | 97 | 91 |
| Total major cost items | *A 79 | 79 | 99 | 90 |
| | B 70 | 67 | 84 | 81 |
| | C 73 | 72 | 83 | 87 |

* Each classification is composed of : A - Current month
B - Average of most current three months
C - Budget year to-date

**EXHIBIT 4**

In August or September of each year, a date is selected and the standard routings in effect at that time are frozen. These are the direct labor standards that are folded into standard costs. The frozen standards (hours at actual volume) are extended daily by the variable budget factors to generate the overhead budget allowances. To people other than floor supervision, performance is shown against frozen standards. Thus, we have an unchanging base from which to measure improvement. By using frozen standard labor as a basis of measuring improvement, we encourage line supervisors, engineers and managers to work together to reduce labor and overhead costs.

The following example will illustrate the principles described. If a department with an overhead rate of $ .50 earns two hours of "frozen" standard labor, it will receive a budget allowance of $1.00. If the direct labor standard is reduced to one hour per piece, or if the engineers and supervisors determine how to cut overhead costs in half, it will make no difference in the budget authorization used for the performance reports and operating charts. The department will always receive credit for:

2 hours of standard direct labor
and
$100 for overhead

for each piece produced

In this manner, we have an unchanging base from which to measure the trend in performance. This program induces the people involved in making the product to work together to reduce costs. Motivation—that is, getting people to do things—is tremendously important. Instead of worrying about whether a budget is right or wrong, our people are looking at actual costs to see what can be done about these expenses.

The works manager and his supervision are informed progressively during the month of their performances. Direct and indirect labor efficiencies are computed and reported daily for each shift and department. Reports are published on the other controllable costs (supplies, tool maintenance, etc.) on the seventh and fourteenth working days and the end of the month. Departmental reports are summarized to totals for each level of responsibility, following the old pyramid rule. Each works reports its budget and actual figures to group staff for each cut-off date. Thus, progress or slippage is published up and down the management chain twice during the month and once at the month end.

Budget reports can be "just figures" and, since we are all human, we forget and then wonder how we could have spent all that money. So we give the supervisor his supply stores or tool requisitions, his scrap tickets and copies of invoices charged to him. These refresh his memory. The dollar figures of actual costs are not just dollar figures—they become grinding wheels, dies, etc. Finally, to assist the supervisor to understand the budget reports, cost control personnel provide a liaison between the accounting department and manufacturing supervision.

### Cost Reduction Programs

Periodically, a works management team will sit down and organize a cost reduction program, usually on a project basis. This type of program allows specific items to be pinpointed and permits cost savings to be measured and evaluated.

Each member of the team is asked to present a cost savings program in his particular area of responsibility; the industrial engineer perhaps method improvements that can be accomplished, the factory engineer a process development to explore, the quality control department will have means of reducing scrap, etc. These thoughts are collected and placed in writing with a schedule of dates of completion and person responsible. The savings are monitored through project reports and charts designed to portray the results achieved.

### Conclusion

Finally, it is essential that all five programs be tied together and coordinated. If one of these areas operates ineffectively, the entire system will suffer.

The final step is the evaluation and analysis of the information received. If this operation is not performed completely, the information available is merely a mass of detail, and of no value to the management personnel. The key to the success of the program is the continuous flow of planning and control, from the long-range forecast through to the cost reduction programs.

# Assisting the Foreman Through Manufacturing Budget

by A. A. COX

RATHER THAN establishing a fixed budget which requires the evaluation of variances depending upon the level of production, we operate with a variable budget in which the allowances fluctuate. While variable allowances are determined in numerous ways throughout the manufacturing industry, such as productive man hours, machine hours, and units produced, we feel that the best measurement is established on the basis of direct labor.

Our manufacturing budget consists of a combination of four reports which are issued by the accounting department as follows:

Weekly and Monthly Plant Control Summary.
Weekly Manufacturing Efficiency Report.
Weekly Analysis of Departmental Burden.
Monthly Analysis of Plant Burden.

## Weekly and Monthly Plant Control Summary

Plant Control Summary (Exhibit 1) reflects: production costs, inventory analysis, hourly and salaried payroll data, and general production information.

*Production cost analysis* shows the standard cost valuation of products transferred from production to the shipping room or finished-goods storehouse. The percentages shown reflect the component parts of material, labor and burden. On a year-to-date basis this may be used as a quick guide to evaluate the effect of prospective cost changes in materials or labor.

*Inventory analysis* reflects the plant's current inventory position with regard to the year-end or opening inventory. The relation of inventories with respect to increases or decreases as well as production value is very vital, as variation either too high or too low will reflect stagnation or possible shortages. The balance between accounts must be maintained according to production conditions to avoid excesses which represent unnecessary investment of cash.

---

**A. A. COX**, Toledo Chapter, 1951, is Group Controller for The Electric Autolite Company, Toledo, Ohio. He has been employed by the same company for 25 years, as accountant, auditor, analyst and director of manufacturing budgets. Mr. Cox attended Toledo University and Ohio State University and has an engineering degree as well as accounting training.

## PLANT CONTROL SUMMARY

Company or Division _____ Period Ended _____

### PRODUCTION COST ANALYSIS

| Finished Production Cost: | Period | % | Year to Date | % |
|---|---|---|---|---|
| Material | | | | |
| Labor | | | | |
| Burden | | | | |
| Total | | 100.0% | | 100.0% |

### INVENTORY ANALYSIS

| | Balance January 1 | Balance End of Period | Increase or (Decrease) Period | Year to Date |
|---|---|---|---|---|
| Raw Material | | | | |
| Work in Process—Material | | | | |
| " " " Labor | | | | |
| " " " Burden | | | | |
| Finished Goods | | | | |
| Supplies | | | | |
| Other Inventories | | | | |
| Total Inventories | | | | |

### HOURLY PAYROLL DATA

| | Period | % | Year to Date | % |
|---|---|---|---|---|
| Tool and Die Dept. | | | | |
| Construction and Maintenance Dept. | | | | |
| Service Personnel | | | | |
| Overtime & Night Bonus | | | | |
| Other Non-Productive | | | | |
| Total Non-Productive Payroll | | | | |
| Direct Labor Produced | | | | |
| Total (a) | | 100.0% | | 100.0% |
| Vacation Pay Paid | | | | |
| Holiday Pay Paid | | | | |
| Retroactive Pay Paid | | | (Included in Above) | |
| Total Hourly Payroll | | | | |
| Number of Man Hours Worked (b) | | | | |
| Average Rate per Man Hour (a÷b) | | | | |
| Overtime Hours Worked | | | | |
| Days Worked | | | | |

| Number of Employees | Male | Female | Period Total | Male | Female | Year to Date Av. |
|---|---|---|---|---|---|---|
| First Shift | Second Shift | | Third Shift | Vacation | | |

### SALARIED PAYROLL DATA

(Represents Only The Portion Charged To Factory Operations)

| | Period | Year to Date |
|---|---|---|
| Non-Productive Labor Incurred | | |
| Number of Man Hours Worked | | |
| Number of Employees | | |

### GENERAL DATA

| | Period | Year to Date |
|---|---|---|
| *Finished Units Produced ( ) | | |
| Units Produced Per Man Hour Worked (Including Private P/R) | | |
| Direct Labor Cost Per Unit | | |
| Non-Productive Labor Cost Per Unit | | |
| Total Labor (a) Cost Per Unit | | |
| *Equivalent Group I Battery Production | | |
| | | |
| | | |
| | | |

**EXHIBIT 1**

*Hourly payroll data* is a brief summary of the factory payroll paid in the indicated period. The relationship between the various elements of nonproductive payroll and the direct labor is the first indication of plant efficiency. A change in the period percentages as compared with the year-to-date indicates wage adjustments, change in mix of nonproductive and direct labor and additional overtime premium and night bonus, and should therefore be closely watched. The number of employees, male and female, by shifts is purely for comparative purposes with the general level of production.

*Salaried payroll data* is included to acquaint the plant with the total amount of salaried help charged to the various nonproductive expenses. While these figures remain fairly constant during normal periods, they should not be considered uncontrollable and thus neglected.

*The general data section* is shown primarily for the purpose of the single unit plants, such as batteries, though it may be used to evaluate production costs wherever a constant unit can be determined.

### Weekly Manufacturing Efficiency Report

Weekly Manufacturing Efficiency Report (Exhibit 2) is a condensed summary of plant expenses which reflects:

1. The combined operation of all productive departments.
2. The plant production operation as a whole.
3. Other expense items.
4. The total plant manufacturing operation.

The combination of all productive departments reflects the operation of the productive departments as compared to the allowable amounts and percentages established for the individual departments at the actual level of productive labor for the period and year-to-date. The expenses itemized are those for which the individual productive foremen are responsible and over which they can exercise the major portion of control. The efficiency percentages under this caption reflect the combined efforts of the productive foremen.

To arrive at a comparison of the total productive operations for the plant as a whole we add the receiving, stock, shipping and management expenses for the same items shown in the productive departments. At this point the percentage will reflect the efficiency and the excess burden expenditure of the entire productive operation of the plant without regard to the other items necessary in the maintenance of the manufacturing operation. The burden loss is the total excess of actual expense over the allowable expense.

## WEEKLY MANUFACTURING EFFICIENCY REPORT

Company or Division _____ Week Ended _____

| | PRODUCTIVE DEPARTMENTS | AMOUNT Allowable | AMOUNT ACTUAL Week | AMOUNT ACTUAL Year to Date | % to Direct Labor Allowable | % to Direct Labor ACTUAL Week | % to Direct Labor ACTUAL To Date |
|---|---|---|---|---|---|---|---|
| 01 | Supervision | | | | | | |
| 13 | Indirect Labor | | | | | | |
| 14 | Excess Labor | | | | | | |
| 15 | Reoperation Labor | | | | | | |
| 16 | Set Up Labor | | | | | | |
| 17 | Inspection Labor | | | | | | |
| 18 | Material Handling | | | | | | |
| 21 | Downtime | | | | | | |
| 26 | Checkers & Time Clerks | | | | | | |
| 29 | Supplies Used | | | | | | |
| 30 | Spoilage & Waste | | | | | | |
| 31-34 | Equipment Maintenance | | | | | | |
| | | | | | | | |
| | TOTAL PRODUCTIVE DEPTS. | | | | | | |
| | EFFICIENCY | | ____% | ____% | | | |
| | OTHER DEPARTMENTS | | | | | | |
| | Receiving & Stock | | | | | | |
| | Shipping | | | | | | |
| | Management Expense | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | TOTAL SERIES III EXPENSE | | | | | | |
| | BURDEN LOSS | | | | | | |
| | EFFICIENCY | | ____% | ____% | | | |
| | OTHER EXPENSE | | | | | | |
| 02-11 | Other Plant Salaries | | | | | | |
| 22 | Overtime Premium | | | | | | |
| 23 | Night Bonus | | | | | | |
| | Fringe Benefits | | | | | | |
| 37 | Recharging Batteries | | | | | | |
| | Utilities Consumed | | | | | | |
| 44 | Depreciation | | | | | | |
| 45 | Rent, Light & Heat | | | | | | |
| 53 | Waste Water Treatment | | | | | | |
| 58 | Union Representatives' Wages | | | | | | |
| 64 | Rearranging & Conversion | | | | | | |
| 65 | Dies, Molds, & Fixtures | | | | | | |
| | Engineering Dept. | | | | | | |
| | Other Not Itemized | | | | | | |
| | Allowable Adjustment | | | | | | |
| | TOTAL OTHER EXPENSE | | | | | | |
| | BURDEN LOSS | | | | | | |
| | EFFICIENCY | | ____% | ____% | | | |
| | TOTAL EXPENSE | | | | | | |
| | BURDEN LOSS | | | | | | |
| | PLANT EFFICIENCY | | ____% | ____% | | | |
| | DIRECT LABOR | | | | | | |

**EXHIBIT 2**

Other expense items are condensed to show the plant manager the main headings which virtually affect his overall operations. The allowable adjustment represents the amount of adjustment necessary both in dollars and percentage to bring the week's allowance to the overall standard burden rate established for the plant. This normally has no reflection on the plant efficiency but is required due to variation of direct labor by department. A comparison of allowed and actual expense both by amount and percent is shown for the period and year to date. The over-expenditure or burden loss is also shown for the other expense section.

The comparison of efficiencies and burden losses usually indicates the reason for the current operating position. For example: high "other expense" loss and a low efficiency tend to show reduction in production or direct labor which will require curtailment of semi-fixed expense. Conversely, a high "production" loss and low efficiency indicate an inefficient production operation, usually within the productive departments themselves. A comparison of year-to-date and allowable percentages of the same expense will indicate the troublesome items. The difference between these two multiplied by the year-to-date direct labor will indicate the comparative importance of the excess.

### *Weekly Analysis of Departmental Burden*

The Weekly Analysis of Departmental Burden (Exhibit 3) is most important of all forms from an expense control standpoint. This is the nucleus of the operating budget for it is the tool with which the productive department foremen must work and includes only the items of expense over which they can exercise the major portion of control.

The departmental budget includes columns for the foregoing expenses as to allowable amounts, actual weekly amounts and actual year-to-date amounts as well as percentages to direct labor on all items. Totals are shown and the burden loss for the week and year to date reflected. This is the amount of actual expenditure in excess of allowance. The efficiencies for the week and year to date are calculated by dividing the allowable total by the actual expenditures in each case.

A provision is made for special analysis of any major item of expense or any item which has a significant effect on the departmental efficiency. The analysis required is determined by the plant manager to highlight the items he may deem necessary, which may change from time to time. Brief comments should be included to point out any unusual expenditures which affect the departmental budget or items which are continually causing excessive burden losses.

**WEEKLY ANALYSIS OF DEPARTMENTAL BURDEN**

Company or Division | Week Ended | Department | No.

Foreman:

| | AMOUNT | | | % to Direct Labor | | |
|---|---|---|---|---|---|---|
| | Allowable | ACTUAL | | Allowable | ACTUAL | |
| | | Week | Year to Date | | Week | To Date |
| 01 Supervision | | | | | | |
| 13 Indirect Labor | | | | | | |
| 14 Excess Labor | | | | | | |
| 15 Reoperation Labor | | | | | | |
| 16 Set-Up Labor | | | | | | |
| 17 Inspection Labor | | | | | | |
| 18 Material Handling | | | | | | |
| 21 Downtime | | | | | | |
| 26 Checkers and Time Clerks | | | | | | |
| 29 Supplies Used | | | | | | |
| 30 Spoilage and Waste | | | | | | |
| 31 Repairs and Maintenance: Machinery and Equipment | | | | | | |
| 33 Tools, Dies and Molds | | | | | | |
| | | | | | | |
| TOTAL | | | | | | |
| Burden Loss | | | | | | |
| Efficiency | | % | % | | | |
| Direct Labor | | | | | | |
| SPECIAL ANALYSIS | | | | | | |
| | | | | | | |

Comments:

**EXHIBIT 3**

## *Monthly Analysis of Plant Burden*

The Monthly Analysis of Plant Burden (Exhibit 4) reflects the detailed expenses, segregated into variable, controllable and fixed. This form is issued as a plant summary with all items detailed to show the plant manager the total expense involved in running his plant as reflected on the corporation books. The allowable percentages shown are the standards for each expense previously determined on a normal potential production. In addition, the burden loss, plant efficiency and direct labor are shown.

A variant of the form is also issued for the productive departments but is less detailed, to reflect only the expenses which can be directly charged to the departments and the general or management expenses combined and allocated under

## MONTHLY ANALYSIS OF PLANT BURDEN

Company or Division _____ Month of _____ Department _____

| | AMOUNT | | | % to Direct Labor | | |
|---|---|---|---|---|---|---|
| | | ACTUAL | | | ACTUAL | |
| VARIABLE EXPENSES | Allowable | Month | Year to Date | Allowable | Month | To Date |
| 13 Indirect Labor | | | | | | |
| 14 Excess Labor | | | | | | |
| 15 Reoperation Labor | | | | | | |
| 16 Set-Up Labor | | | | | | |
| TOTAL BURDEN | | | | | | |
| BURDEN LOSS | | | | — | — | — |
| PLANT EFFICIENCY | | % | % | — | — | — |
| DIRECT LABOR | | | | — | — | — |

*See Reverse Side for Detail.

### ANALYSIS OF OTHER PLANT SALARIES

| | MONTH | YEAR-TO-DATE |
|---|---|---|
| | Amount | Amount |
| Factory Clerical | | |
| Cost and Estimating Dept. | | |
| Planning Dept. | | |
| Methods Dept. | | |
| Payroll Dept. | | |
| Time Study Dept. | | |
| Employment Dept. | | |
| Purchasing Dept. | | |
| Tabulating Dept. | | |
| Traffic Dept. | | |
| | | |
| | | |
| | | |
| TOTAL | | |

### ANALYSIS OF OVERTIME PREMIUM—FACTORY P/R

| | MONTH | YEAR-TO-DATE |
|---|---|---|
| | Amount | Amount |
| Total Per Series IV | | |
| Tool Room | | |
| Maintenance Dept. | | |
| Manufacturing Bldg. | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| TOTAL | | |

### ANALYSIS OF SPOILAGE AND WASTE

| | MONTH | YEAR-TO-DATE |
|---|---|---|
| | Amount | Amount |
| Material | | |
| Labor | | |
| Burden | | |
| TOTAL | | |

**EXHIBIT 4**

the three captions of general expense. Allowable percentages may be shown as desired by the respective plants. Similar forms are issued for all service centers such as tool and die construction and maintenance, manufacturing building, hospital, steam generating, etc. They differ from those for productive departments in that no direct allocation is made for general expense.

In addition to serving the plant manager, the productive department foreman and the service department foreman, this series of forms is used by the cost estimating department. It is a vital report of actual burden costs which permits them to determine true manufacturing costs through the application of departmental burden rates. From this, management may evaluate conditions and determine the proper sales prices.

### *Establishment of Allowances*

As previously stated, we operate on what is commonly called a variable budget and, therefore, it is necessary to establish allowances which will vary with the trend of production levels. Of the numerous methods used in industry, we feel that the most equitable for cost control is the dollar amount of direct labor produced at a given standard and for a predetermined normal capacity, departmentally and plant-wide. In order to maintain this relationship between direct labor and expense this must be expressed as a ratio. Normally, allowances are established once a year, taking into consideration past experience, anticipated changes, reasonably expected performance, and economical capacities. This does not mean that the allowance percentages are permanently fixed, but rather they should be revised for any major change in production methods or manufacturing conditions.

All allowances established should represent the best thinking of the foreman, production manager and plant accountant as to the most realistic goal of economical operation for each department and each expense. Numerous methods are employed in arriving at allowances but in no case should they be finalized until mutually agreed upon. As a representative procedure, we are outlining the following method which is used in several plants. First, the plant accountant discusses with the plant manager or production manager the estimate of the coming year's business, the normal capacities of each department, past experience and expected changes in products or models which affect operations. With this information and general knowledge of the plant, he breaks down the direct labor by departments and establishes tentative allowances primarily based on past performance and expected efficiency.

At this point, the foreman is brought into the picture and each item of ex-

pense in each department evaluated. The anticipated direct labor should be broken down as the number of hours and employees, hourly rates, mix of products, etc. From this, direct comparison must be made with each expense. As an example, let us consider the first item, supervision. Complete cognizance should be given to the condition and amount of salaried supervision, number of employees supervised, number of shifts required, etc. As we are operating with dollar costs, the variation in rates between expenses and direct labor must be properly considered in establishing rates. In other words, the amount of the estimated expense must be considered in making comparisons with the anticipated direct labor. Each expense item should be reviewed in the same manner and evaluated as to its nature and the effects of variation in types of production; in the case of set-up labor, for example, length of production runs and tool life should be a major factor. It is also recommended that in reviewing the maintenance items, the foremen of the respective service departments be consulted as to their appraisal of the expense to be absorbed.

The allowance percentage to direct labor should then be established by the foreman and the plant accountant on the basis of the most economical performance attainable. The allowances should vary depending on the amount of direct control the foreman can exercise, and the nature of the expense itself. As examples, salaried supervision should be considered nearly a constant amount at the predetermined level of production and, therefore, practically covered by the allowance; however, excess labor and downtime, which are complete losses, should be covered only to the extent that they may no longer be reduced. While the individual allowances will vary as to the possibility of 100-percent performance, the overall allowance should be such that a reasonable performance is attainable and yet allows a goal for achievement. After the departmental allowances have been tentatively set, they should be reviewed with the production or plant manager. In this manner we gain the advantage of the overall view of the productive operation and, at the same time, reconcile any disagreements as to individual allowances.

To this nucleus of departmental allowances, the plant accountant will add those of a general nature such as receiving, shipping, management and miscellaneous which reflect the overall plant operations and are shown on the plant control summary and efficiency reports. Here again, an agreement must be reached with the plant manager as to the individual expense items as well as the overall allowance. This must be a realistic appraisal of the plant's potential capacity and ability to produce at a reasonable efficiency.

When the allowances are set to the satisfaction of the plant manager they are sent to the budget department for review and, if reasonable, approved by

the controller's office for use in the following year. All allowances thus approved become the overhead rate to be applied to direct labor and a component of the standard used in evaluating inventories and cost of sales.

The establishment of accurate allowances is extremely important for upon these basic conditions hinge many managerial decisions which vitally affect the plant's operations. They become the basis of determining selling prices for all products manufactured, and may easily cause the acceptance or rejection of business as well as affect the decision to manufacture parts or purchase them from an outside vendor.

### Budgetary Control

From the foregoing, it is easily seen that it is the foreman's responsibility to exercise cost control of his departmental operations measured by the weekly analysis of departmental burden. Included are only the items of expense over which he may exert the major part of control, namely, departmental labor, supplies used, spoilage and waste, and repairs and maintenance. As he was jointly responsible for the setting of allowances, the budget should equitably measure his efforts in operating his department efficiently and economically.

To assist the foremen in the task, numerous additional reports and analyses are prepared, depending upon the individual departments and plants. As a minimum, a daily or detailed analysis should be maintained on the six major classes of expense.

*Nonproductive labor.* A daily breakdown of hours or employees is used in some plants to assist the foreman in control of departmental labor. In some instances, the budget is broken down into hours or employees and a graduated chart made which evaluates handling, set-up, reoperations, etc., for various levels of direct labor. Through the use of this form the foremen can properly man his department merely by counting "noses" in each nonproductive class and comparing them with the productive count. Other plants make daily labor distributions which are furnished the foremen the following day. From this each one may determine his previous excesses and make the necessary adjustments to keep his labor cost in line.

*Supplies used.* Several methods are used to control supply usage other than the usual safeguards of storerooms, requisitions and proper authorization. These may include: pricing of requisitions and returning to the foreman, daily summaries by classes or codes of supplies and even detail priced summaries daily or weekly. Preferably in most plants, a daily listing of supplies used is made as well as a weekly priced summary of all supplies used.

*Spoilage and waste.* As in the case of supplies used, this expense is handled according to the individual needs of each plant. Individual scrap tickets written on each item, showing last operation and cause of reject, should be signed by the foreman of the department charged. In addition to this, daily summaries or lists are made, showing each foreman the spoilage his operations were responsible for on the previous day so that immediate steps can be taken to correct the deficiencies. These daily reports or their equivalents should be processed and the total amount of spoilage shown on the budget detailed and analyzed weekly.

*Repairs and maintenance.* One of the major problems of a departmental foreman exists within this classification. Adequate control must be exercised in regard to charges from the various service departments. It is recommended that the work request form used in many plants become the authorization from the departmental foreman to have minor repair jobs performed. In addition to this, more costly projects should be controlled by internal work orders issued by the methods department. In any event, some form of daily reporting as to the maintenance hours chargeable against the productive departments should be maintained. This may be a simple listing of hours taken directly from the time cards or elaborate tabulations of jobs, hours, costs, etc., depending upon the individual needs.

*Excess labor.* In discussing the reporting of nonproductive labor costs this item was not mentioned; however, it is one of the most important expenses affecting departmental efficiency. In order to properly control this, the foreman must be thoroughly acquainted with its content, methods of its evaluation and its causes.

*Purchases from outside workers.* In addition to the items enumerated in the foregoing, are charges for supplies or maintenance over which the departmental foreman cannot exercise the desired control by weeks but which are the result of requisitions or purchases instituted at his request and, therefore, the prime control rests within his hands. As a general rule, direct charges of this nature are not sufficient to upset or distort the departmental performance but, if such should be the case, only for the individual period in which they are recorded. Any major items affecting efficiency should be noted in the comment section.

Monthly analysis of plant burden also serves the foreman by reflecting as near as possible the overall actual cost of running his department. While the additional items not reflected on the weekly analysis of departmental burden forms cannot be considered wholly controllable, they should not be neglected in the effort to reduce burden expense. Several examples of this nature can be illustrated.

*Fringe benefits.* The foreman should always be aware of the fact that in addition to the employees' normal rate of pay approximately one-third must be added to cover these costs and that any labor excess carries this additional penalty.

*Overtime and night bonus.* While these items are not always within the realm of departmental control, they are in a large measure the result of conditions previously created by departmental operation. The realization that failure to meet production requirements may ultimately result in additional penalties through the premium pay can be a factor in the control of these costs.

*Utilities consumed.* Considered together under this caption are power, gas, air, water and steam. While these expenses are taken pretty much for granted and considered a necessary evil, they are not beyond the realm of cost control. Excessive power surges, continually running water, leaky steam valves and abnormal gas usage are items which add to the overall plant expense and thus increase the departmental costs. Regardless of how insignificant such an item may seem, the cost-conscious foreman will attempt to reduce or eliminate it.

*Depreciation.* Probably one item the average foreman gives little or no thought is depreciation. However, he should realize that every piece of machinery or equipment he adds to his department will increase his cost. By the same token he is penalized by any idle or partly utilized machine not transferred from the department. Under our present depreciation policy this can result in as much as $1\frac{1}{2}$ percent of the machine's valuation in one month.

## Conclusion

Armed with the proper information, the departmental foreman should have little difficulty in determining the basic factors affecting the efficiency of his operations and, through proper analysis, the conditions to be corrected.

Through this understanding of the manufacturing budget comes the realization that, though he may not be in absolute and direct control of all expenses, he does exercise the major portion of control over his department and that he, as a member of management, is responsible for all expenses.

# *Machine Accounting Tabulations for Budgetary Planning*

by JOSEPH M. PALECEK

THE DEVELOPMENT of machine accounting methods has replaced manual accounting procedures extensively in many areas. Recently, budgetary planning has acceded to the same attractions of mechanical processes for the refinement and extension of budgetary control. This paper describes a practical approach developed by one division of a multiplant industrial company for the correlation of the sales forecast and plant budgets in developing costs of sales for financial statements through the use of tabulating equipment. The Inorganic Chemicals Division of our company manufactures and distributes to customers and other divisions of the company an integrated line of industrial chemicals from fourteen domestic plants. All the products are classified into product groups on the basis of their chemical characteristics. Products from more than one product group may be manufactured in a single plant.

## *The Sales Forecast*

The first step in budgetary planning is the preparation of the sales forecast. A sound foundation is provided for the entire budget structure if the sales forecast is realistic and set at an attainable level. Otherwise, the entire budget program will be a labor in vain. The forecast of sales should be based on an analysis of past experience and current market prospects. A sound forecast of sales provides an important contribution to the planning required to coordinate the complex activities of a modern business. The expedient of getting the sales people to sit down and plan next year's activities may be a vital element of control in itself.

Our annual sales forecast by products coincides with the calendar year. Planning for the annual sales forecast starts early in the year; next year's sales forecast is scheduled to be ready for review the last week in August of the current year. This schedule presents some difficulties for our sales people, since many of our customer sales contracts for the next year are not actually consummated until several months later. In such circumstances it is necessary to estimate the customers' demands, based on our knowledge of the markets and adjusted to the

**JOSEPH M. PALECEK**, St. Louis Chapter, 1953, is Assistant Plant Accountant of the Carondelet Plant, Monsanto Chemical Company, St. Louis, Missouri. He is a graduate of Washington University, St. Louis, Missouri.

economic level of activity anticipated. The firm forecast of sales is furnished to the plants by the second week of September. It is then modified by the plants to reflect the anticipated inventory position of each product at the end of the current year.

For each product the sales department is provided a pre-punched card (Exhibit 1) which, when interpreted, shows the following information:

- Product (description)
- Manufacturing plant
- Product code
- Product grade
- Sales analysis code
- Product group code
- Classification of the sale
- Method of packing—whether the material is shipped in bulk or packed in containers

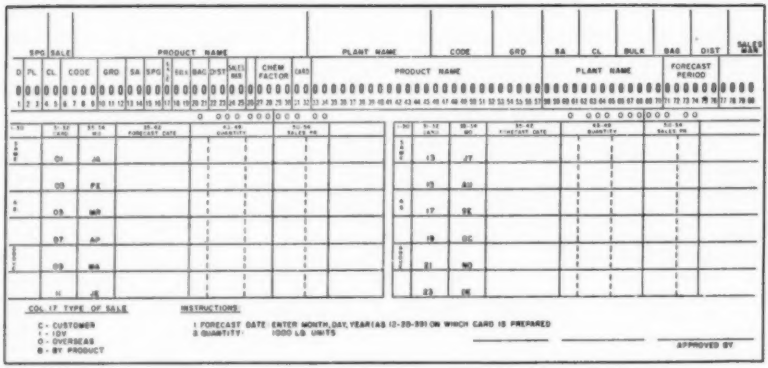



**EXHIBIT 1**

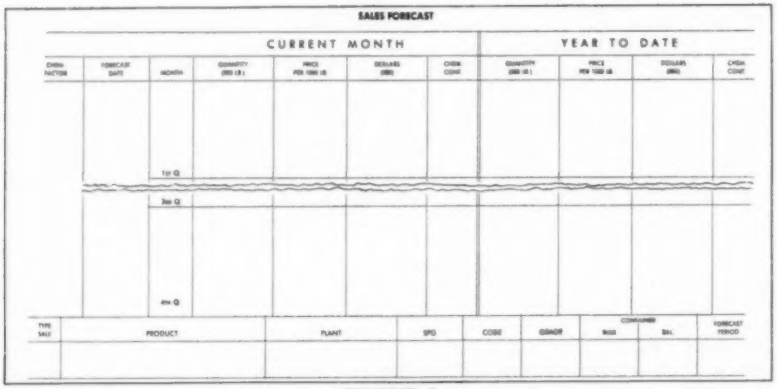



**EXHIBIT 2**

Forecast date, forecast quantity (in thousands of pounds) and net sales price (per thousand pounds) are then inserted on the tabulating card by the sales forecaster. After this information has been reviewed and approved by the sales department management, the tabulating cards are delivered to the accounting department for key-punching and preparation of the tabulated sales forecast (Exhibit 2).

The tabulated sales forecast lists by months the quantities, net sales prices and the extensions of the quantities multiplied by the net sales prices for each product and provides quarterly totals for the current month section. The year-to-date section of this tabulation summarizes the current month information on a year-to-date basis. Individual summaries are then prepared for each product group with a summary grand total of all product groups.

### *Plant Budgets*

After the sales forecast has been reviewed and accepted by the budget committee and top management, it is forwarded to the producing plants to be used as the basis for the preparation of the plant budgets for the next year. On the basis of the forecast sales quantities adjusted for inventory levels, the plant accounting departments and the plant production supervisors jointly prepare an Estimate of Cost (Exhibit 3) for each production and utility department.

The estimates of cost are prepared on the basis of quarterly totals rather than monthly totals since past performance has indicated the monthly variations are not significant while the variations for the three-month periods are large enough to justify quarterly totals. The use of quarterly totals also has the effect of reducing the volume of paperwork required in the preparation of the budget. The estimate of cost is the actual production department budget and, when gathered for all departments, it is the basis of the plant budget. It is also correlated with the production cost standards already established for each product.

The estimate of cost divides the total manufacturing cost of a product into three basic categories: raw materials, direct conversion expense and indirect conversion expense, and is prepared to reflect the expected actual costs as they vary from one quarter to another. A section is provided for pertinent information and statistical data on material and labor used in the actual calculations of costs.

The estimated quantities of raw materials and utilities required to produce finished goods are inserted in the raw materials and services section of the estimate of cost. The quantities shown reflect adjustments for forecast changes in manufacturing techniques or for improvements in yield which might result from

## Estimate of Cost

Product ______ Dept. No. ______
Estimated by ______ Date ______

General Assumptions

Raw material and service prices

| Material | Unit | At source | Freight | Unloading | In stock |
|---|---|---|---|---|---|

Labor Rates and Hours Used

| Class | No | Date | A | B | C | D | E |
|---|---|---|---|---|---|---|---|

Note--"S" in class column indicates shift labor and rate includes shift bonus.
Labor mfg. cost = No. x rate x hours x ______ % for vacations.

---

Production - Lbs.
Days Operated
Annual Capacity - Lbs.

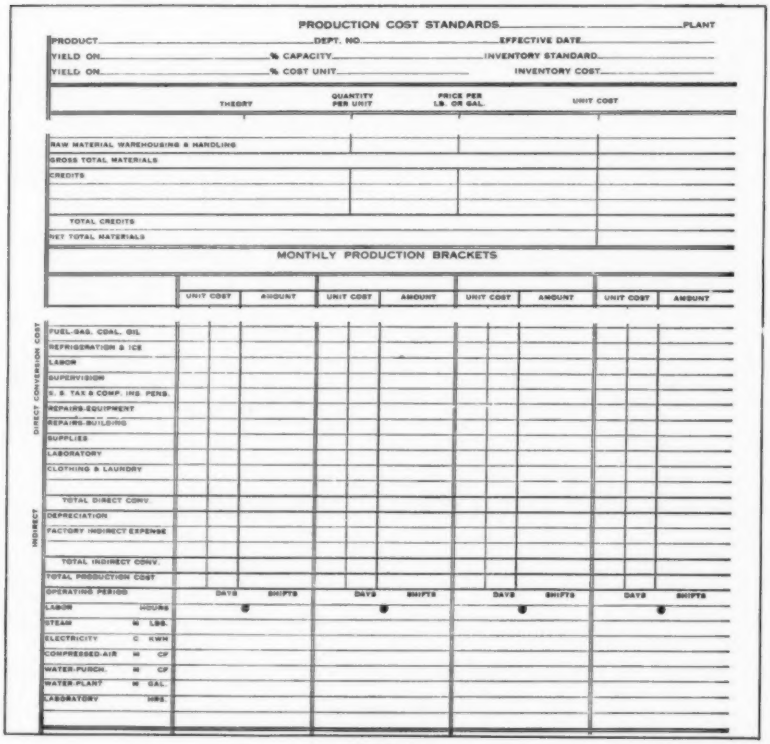
| | Raw Materials & Services | | Product A, Days Shifts: Quantity | Per 100* | Annual sales budget, Days Shifts: Quantity | Per 100* |
|---|---|---|---|---|---|---|
| Practice | Steam | Lbs. | | | | |
| | Electricity | Kwh | | | | |
| | Water - city | cf | | | | |
| | Water - plant | cf | | | | |
| | Fuel, gas | cf | | | | |
| | Laboratory | Unit | | | | |
| | | | Cost | | Cost | |
| Materials only | | | | | | |
| | Total Raw Materials | | | | | |
| Direct conversion | Steam | | | | | |
| | Electricity | | | | | |
| | Water - city | | | | | |
| | Water - plant | | | | | |
| | Fuel, gas | | | | | |
| | Labor - mfg. | | | | | |
| | Supervision - mfg. | | | | | |
| | S.S. Tax, comp. ins., pensions | | | | | |
| | Repairs - M & E | | | | | |
| | Repairs - bldgs. | | | | | |
| | Factory supplies | | | | | |
| | Laboratory | | | | | |
| | Total Direct Conversion | | | | | |
| Indirect | Depreciation | | | | | |
| | Controllable - F.I.E. | | | | | |
| | Noncontrollable - F.I.E. | | | | | |
| | Truck cost | | | | | |
| | Total Indirect Conversion | | | | | |
| | Total Mfg. Cost - Bulk | | | | | |
| Packing | Lbs. packed | | | | | |
| | Labor, S.S. Tax, Etc. | | | | | |
| | Containers | | | | | |
| | Supplies | | | | | |
| | Total Packing Cost | | | | | |
| Shipping | Lbs. shipped | | | | | |
| | Labor, S.S. Tax, etc. | | | | | |
| | Supplies and misc. | | | | | |
| | Total Shipping Cost | | | | | |
| | Total Cost - F.O.B. Cars | | | | | |

**EXHIBIT 3**

process modification or substitution of raw materials. The "materials only" section contains the extensions of the raw material quantities by the in-stock unit prices. The utilities extensions are shown in the direct conversion expense section. The direct conversion expenses are based on the expected actual performance of the forecast level of operations. Indirect conversion expenses represent depreciation, insurance and taxes, and allocated portion of the controllable factory indirect expenses (the fixed service department expense). Packing and shipping are included on the basic form although these sections are used only by those departments which have such elements of cost in their production.

### *Production Cost Standards*

The plant accounting departments prepare with the plant supervisors for each product a Production Cost Standard (Exhibit 4), which is a combination of


PRODUCTION COST STANDARDS _____ PLANT

PRODUCT _____ DEPT. NO. _____ EFFECTIVE DATE _____

YIELD ON _____ % CAPACITY _____ INVENTORY STANDARD _____

YIELD ON _____ % COST UNIT _____ INVENTORY COST _____

| | THEORY | QUANTITY PER UNIT | PRICE PER LB. OR GAL. | UNIT COST |
|---|---|---|---|---|
| RAW MATERIAL WAREHOUSING & HANDLING | | | | |
| GROSS TOTAL MATERIALS | | | | |
| CREDITS | | | | |
| | | | | |
| | | | | |
| TOTAL CREDITS | | | | |
| NET TOTAL MATERIALS | | | | |

MONTHLY PRODUCTION BRACKETS

| | UNIT COST | AMOUNT | UNIT COST | AMOUNT | UNIT COST | AMOUNT | UNIT COST | AMOUNT |
|---|---|---|---|---|---|---|---|---|
| DIRECT CONVERSION COST | | | | | | | | |
| FUEL-GAS, COAL, OIL | | | | | | | | |
| REFRIGERATION & ICE | | | | | | | | |
| LABOR | | | | | | | | |
| SUPERVISION | | | | | | | | |
| S. S. TAX & COMP. INS. PENS. | | | | | | | | |
| REPAIRS-EQUIPMENT | | | | | | | | |
| REPAIRS-BUILDING | | | | | | | | |
| SUPPLIES | | | | | | | | |
| LABORATORY | | | | | | | | |
| CLOTHING & LAUNDRY | | | | | | | | |
| | | | | | | | | |
| TOTAL DIRECT CONV. | | | | | | | | |
| INDIRECT | | | | | | | | |
| DEPRECIATION | | | | | | | | |
| FACTORY INDIRECT EXPENSE | | | | | | | | |
| | | | | | | | | |
| TOTAL INDIRECT CONV. | | | | | | | | |
| TOTAL PRODUCTION COST | | | | | | | | |
| OPERATING PERIOD | | DAYS / SHIFTS | | DAYS / SHIFTS | | DAYS / SHIFTS | | DAYS / SHIFTS |
| LABOR HOURS | | | | | | | | |
| STEAM M LBS. | | | | | | | | |
| ELECTRICITY C KWH | | | | | | | | |
| COMPRESSED AIR M CF | | | | | | | | |
| WATER-PURCH. M CF | | | | | | | | |
| WATER-PLANT M GAL. | | | | | | | | |
| LABORATORY HRS. | | | | | | | | |
| | | | | | | | | |

**EXHIBIT 4**

predetermined cost standard and variable budget. Four levels of operation are calculated in order to obtain a variable budget: capacity (maximum or standard) level, minimum, and two other anticipated levels of production. The theory behind the variable budget is that actual departmental volumes are too changeable to be reasonably represented by an annual calculation evenly divided into twelve monthly periods. The production cost standards are used both to establish a norm for operations and to provide a basis for the valuation of goods-in-process and finished-goods inventories. The production cost standards are reviewed and revised each quarter to anticipate any changes which are expected to occur during the next three months.

### *Profit and Loss Statements*

Plant budgets, containing the fixed service department budgets in addition to the estimate of costs for each production and utility department, are forwarded by each plant, along with appropriate explanations, to the budgetary control section of the division accounting department. The budgetary control section correlates the sales forecast, the plant budget information and the plant production standards through the use of a tabulating card (Exhibit 5). The data shown at the top of the tabulating card is reproduced from the sales forecast card (Exhibit 1). The following information is entered on the tabulating card:

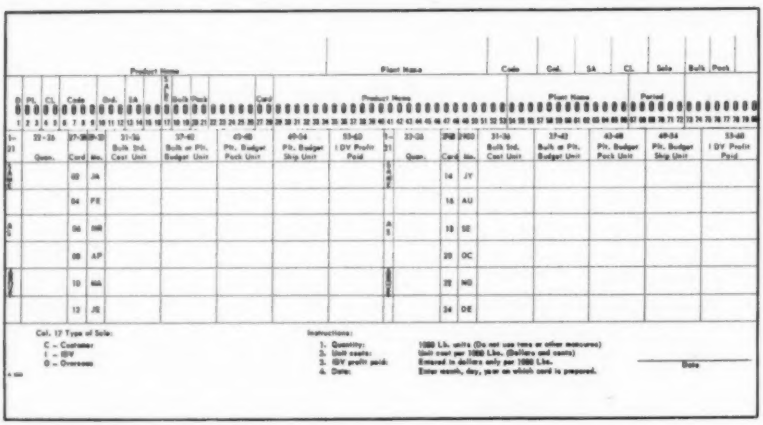



**EXHIBIT 5**

| *Detail* | *Source of Data* |
|---|---|
| Sales quantity | Sales forecast |
| Bulk standard cost | Production cost standard |
| Bulk cost at plant budget unit | Plant estimate of cost |
| Plant budget packing unit | Plant estimate of cost |
| Plant budget shipping unit | Plant estimate of cost |
| Interdivision profit paid | Analysis of interdivision products consumed |

After the above information has been entered, the cards are forwarded to the tabulating department for key-punching and the preparation of the cost of sales tabulation. The cost of sales tabulation, prepared on an I.B.M. 604 computer, provides the following ten-column information on each product for which a quantity was forecast:

1. Month
2. Quantity
3. Net sales amount
4. Standard bulk cost amount
5. Budget bulk cost amount
6. Packing expense amount
7. Shipping expense amount
8. Interdivision profit paid
9. Total of Columns 4 to 7
10. Gross profit Column 3 minus 9

The following information is derived from the summary of the cost of sales tabulation by products for use in our forecast profit and loss statements:

| *Item* | *Column of cost of sales tabulation* | *Remarks* |
|---|---|---|
| Net sales | 3 | |
| Bulk cost at standard | 4 | |
| Packing cost | 6 | |
| Shipping cost | 7 | |
| Manufacturing expense charged to income | 5 minus 4 | (Loss variation if black, gain variation if red) |
| Gross profit | — | |

The manufacturing expense charged to income is the cost of actual operations over or short of standard and is attributable to the difference in the level of operations, as forecast, and the capacity of the producing departments, as reflected in the production cost standard for that department.

### Accomplishments Derived from the Program

Many benefits are derived from this entire program which, while not specifically traceable to our tabulating program, are well worth noting. Since the

budgets are prepared by unit of accountability which is consistent at all plants, management is enabled to make uniform comparisons between plants. Out-of-line costs can be discovered and eliminated. Pricing of inventories is simplified and standardized with corresponding easing of accounting routines. Cost estimates are available and accurate. The variable concept of the budget has resulted in the whole-hearted support and cooperation of the operating supervisors because of the allowances for variations in volume that are inevitable during the annual production cycle. The entire organization has become more budget-minded and, therefore, company-minded because budgeting encompasses all viewpoints.

There are secondary but valuable uses of the tabulating cards created in our operation. The cards used for the sales forecast and cost of sales detail may be used as input units for an I.B.M. 702 computer for a monthly program of comparing actual to forecast sales amounts, quantities and costs with the objective of ascertaining reasons for variations in gross profit. The causes of these differences are expressed in amounts of fluctuations in sales volume, selling price and cost for each product.

The forecast sales tabulating cards may be used for a variety of statistical tabulations of the forecast sales. Tabulations of the forecast products may be produced to determine the total sales of a product manufactured at several different plants, the total sales by type of sale, total sales by plants, and many other combinations.

The use of machine accounting is a practical solution of the problem of forecasting sales and cost of sales. However, it should not be inferred that the use of electronic and tabulating equipment is a panacea for any of the ills usually associated with establishing a good budget, for, as in budgets not mechanized, the importance of forecasting accurately the expected sales volume must be emphasized as this is the key to all other forecasts and estimates. On the other hand, responsibility and the backing of management are just as necessary as they are to the budget without mechanization. But where these essentials are present, it is quite practicable to achieve the tabulating, recapping and extending of primary budget statistics through the use of tabulating equipment to obtain availability and flexibility not easily accomplished through any other method.

# Profit and Loss Budget by Volume

by FELIX E. BARIDON

A PROFIT AND LOSS BUDGET must be first related to costs and the operating budget that goes with it. An operating budget that reflects volume, however, should be an activity budget which establishes costs at various levels of capacity.

Capacity is not necessarily based on machine hours but rather on the balanced production labor hours, including bench work, that will maintain an uniform flow of products through the plant. Activity requirements can be established for various levels of capacity starting with a forty-hour week as 100 percent. Additional budgets at 50 percent, 150 percent and, perhaps, 200 percent should be sufficient, as intermediate values can be prorated, because the variability of each budgeted expense will be established. The end results of such a budget might be as shown on Exhibit 1.

This is, of course, an input budget in which the current month's budget allowances are determined by the month's activity level. That is, if the direct productive labor hours are 22,500, the activity level is 125 percent and all expense allowances are midway between the 100 percent and 150 percent values, each varying in its own cycle. As can be seen from the percent variation from 100 percent, there is a varying amount of lag in the rate of increase or decrease.

## Profit and Loss Budget

The above expense figures are the bulk of costs, so that in building a profit and loss budget on this base, it is necessary to calculate what shipments and material cost should be at the various levels. Shipments involve prices and the pricing policy from an over-all point of view. In other words, what is the average override on manufacturing costs management aims at or hopes for? This must take care of general, administrative and selling expenses, plus a certain percentage for profit on sales. Using the 100-percent level as the base, a profit and loss budget might be constructed as in Exhibit 2.

In order to reach a 15-percent profit on sales at the 100-percent level, it would be necessary to load gross costs 45 percent. This then establishes the anticipated gross shipments.

This tabulation will show management what to expect at various levels of

---

**FELIX E. BARIDON** was Secretary-Treasurer-Director of the Barden Corporation when he retired. Earlier, he held various positions in accounting, industrial research, investment analysis and statistics. Mr. Baridon has previously contributed to the *Bulletin*.

OPERATING BUDGET
Per Mo.

| | | 50% ($100) | 100% | 150% ($100) | 200% ($100) |
|---|---|---|---|---|---|
| 1. | Direct Prod. Labor Hrs. | 9,000(50.0) | 18,000 | 27,000(150) | 36,000(200) |
| 2. | Total Mfg. Empls. | 181(60.8) | 298 | 425(142) | 527(177) |
| 3. | Total Co. Empls. | 207(62.5) | 331 | 463(140) | 572(173) |
| 4. | Direct Prod. Labor $ | 15,000(51.2) | 29,300 | 43,800(147) | 58,000(188) |
| 5. | Direct Insp. Labor $ | 6,200(51.8) | 12,000 | 17,800(148) | 23,000(192) |
| 6. | Total Dir. Labor $ | 21,200(51.3) | 41,300 | 61,600(149) | 81,000(196) |
| | Factory Expense | | | | |
| 7. | Salaries and Wages | 40,955(78.4) | 52,235 | 75,205(144) | 88,825(170) |
| 8. | Control. Dept. Exp. | 13,695(55.8) | 24,515 | 35,045(143) | 42,425(173) |
| 9. | Control. Gen. Exp. | 3,650(69.5) | 5,250 | 6,500(124) | 7,550(144) |
| 10. | Taxes, Ins. & Fixed | 17,400(81.7) | 21,300 | 26,050(122) | 29,700(140) |
| 11. | Factory Burden | 75,700(73.3) | 103,300 | 142,800(138) | 168,500(163 |
| 12. | Burden Rate (11→ 6) | 357% | 250% | 232% | 206% |
| | G. & A. & S. Exp. | | | | |
| 13. | Salaries & Wages | 15,700(84.0) | 18,700 | 21,000(112) | 24,300(130) |
| 14. | Control. Dept. Exp. | 1,495(84.2) | 1,775 | 2,175(122) | 2,360(133) |
| 15. | Control. Gen. Exp. | 7,805(74.5) | 10,475 | 12,225(117) | 14,015(134) |
| 16. | Taxes, Ins. & Fixed | 3,300(60.5) | 5,450 | 7,000(128) | 8,325(152) |
| 17. | Total G. & A. & S. | 28,300(77.8) | 36,400 | 42,400(117) | 49,000(135) |

Note: Controllable General Expense - Employee Relations, Heat, Light & Power, Communications, Fees, etc.
Fixed Expense - Rent, Interest, Depreciation, etc.

**EXHIBIT 1**

activity, assuming that the prices remain stable, that expense budgets are adhered to, and that costs are maintained. The effect on profit of any deviations, such as a price rise or cut, or cost rise, etc., can be predetermined from this tabulation.

In order to determine whether the current month's profit and loss was good, bad or indifferent, the current output level should be approximated by dividing the gross cost of sales by the cost of sales at the 100 percent or 162.6 (Line 7). If the ratio is 125 percent, then the profit for the month should have been one-half the difference between 34.0 and 75.7 (Line 12) or 54.85. This ratio is generally better than using gross shipments as the latter total is affected too much by price deviations and product mix. Any deviation from the anticipated profit should be analyzed to determine the source.

PROFIT AND LOSS BUDGET
(000) Per Mo.

(Actual Burden)

| | 50% | 100% | 150% | 200% |
|---|---|---|---|---|
| 1. Gross Shipments | 118.0 | 236.0 | 354.0 | 472.0 |
| 2. Returns | 4.5 | 9.0 | 13.5 | 18.0 |
| 3. Net Sales Shipments | 113.5 | 227.0 | 340.5 | 454.0 |
| Cost-of-Sales | | | | |
| 4. Material (Per Dir. Lab. Hr.) | 9.0 | 18.0 | 27.0 | 36.0 |
| 5. Direct Labor (Oper. Bud.) | 21.2 | 41.3 | 61.6 | 81.0 |
| 6. Burden (Oper. Bud.) | 75.7 | 103.3 | 142.8 | 168.5 |
| 7. Gross Cost-of-Sales | 105.9 | 162.6 | 231.4 | 285.5 |
| 8. Cost-of-Sales Returns | 3.0 | 6.0 | 9.0 | 12.0 |
| 9. Net Cost-of-Sales | 102.9 | 156.6 | 222.4 | 273.5 |
| 10. Factory Profit (3-9) | 10.6 | 70.4 | 118.1 | 180.5 |
| 11. Gen., Adm. & Sell. (Budget) | 28.3 | 36.4 | 42.4 | 49.0 |
| 12. Operating Profit (10-11) | (17.7) | 34.0 | 75.7 | 131.5 |
| 13. Profit On Sales (12÷3) | (15.6)% | 15.0% | 22.2% | 29.0% |

**EXHIBIT 2**

Management can also see that, if there should be a splurge in activity with resultant lower costs and increases in profit, any decrease in prices should be viewed with caution if the increase in activity is only temporary. There is also a very distinct effect on inventories at the higher levels, as costs become lower. That is, the ratio of inventories to sales on the high side should be less, and the reverse at levels below 100 percent.

### *Fixed Burden*

It will be noted that there was a considerable variation in the burden rate (Line 12) in the operating budget which is largely the cause of the changes in the value of the inventory. Using the 100-percent level as the base and applying the burden rate shown on Line 12 to costs tends to stabilize costs and inventories. If these costs are then used for establishing prices, sales will also be stabilized at the various levels of activity. The difference between actual burden and burden applied can be disposed of as over- or under-absorbed burden. A profit and loss budget using a fixed burden rate would deviate from the above in the manner displayed on Exhibit 3.

With stabilized costs, inventory needs can also be budgeted except that at the 50-percent level some of the under-absorbed may have to be taken into inventory. It must be remembered, of course, that the over- or under-absorbed will come from the input side, that is, the operating budget. This may not be at the same activity level as the sales shipments or output side.

PROFIT AND LOSS BUDGET
(000) Per Mo.

| (Fixed Burden) | 50% | 100% | 150% | 200% |
|---|---|---|---|---|
| 1. Gross Shipments | 118.0 | 236.0 | 354.0 | 472.0 |
| 2. Returns | 4.5 | 9.0 | 13.5 | 18.0 |
| 3. Net Sales Shipments | 113.5 | 227.0 | 340.5 | 454.0 |
| Cost-of-Sales | | | | |
| 4. Material (Per Dir. Lab. Hr.) | 9.0 | 18.0 | 27.0 | 36.0 |
| 5. Direct Labor (Oper. Bud.) | 21.2 | 41.3 | 61.6 | 81.0 |
| 6. Burden (250%) | 53.0 | 103.3 | 154.0 | 202.5 |
| 7. Gross Cost-of-Sales | 83.2 | 162.6 | 242.6 | 319.5 |
| 8. Cost-of-Sales Returns | 3.0 | 6.0 | 9.0 | 12.0 |
| 9. Net Cost-of-Sales | 80.2 | 156.6 | 233.6 | 307.5 |
| 10. Factory Profit (3-9) | 33.3 | 70.4 | 106.9 | 146.5 |
| 11. Gen., Adm. & Sell. (Budget) | 28.3 | 36.4 | 42.4 | 49.0 |
| 12. Operating Profit (10-11) | 5.0 | 34.0 | 64.5 | 97.5 |
| 13. Over(under) Absorbed Burden | (22.7) | .0 | 11.2 | 34.0 |
| 14. Net Operating Profit (12+13) | (17.7) | 34.0 | 75.7 | 131.5 |
| 15. Inventory-4 Turns (3 x L7) | 250.0 | 487.8 | 727.8 | 958.5 |

**EXHIBIT 3**

In comparing actual profit and loss with these forecasts, the reason for the differences can be analyzed:

*Sales.* The reason for an increase or decrease in the sales volume may be due to the product mix where individual prices were not set at the anticipated 15-percent margin, or returns may be high or low.

*Cost of sales.* Actual cost of sales may be high or low, compared to the anticipated. The difference reflects the efficiency or lack of efficiency in the manufacturing operation. The deviation from standard costs should indicate the amount.

*General, administrative and selling expense.* The variation from budget will account for the differences in these periods costs.

*Operating profit.* The above variations will indicate the source and amount of the deviation from the anticipated operating profit.

*Over- or under-absorbed.* Deviations here will come from the input side at the amount by which the production department exceeded or bettered its operating budget.

PROFIT AND LOSS BUDGET
(000) Per Mo.

(Revised Burden and Prices)

| | | 50% | 100% | 150% | 200% |
|---|---|---|---|---|---|
| 1. | Gross Shipments | 108.0 | 216.0 | 325.0 | 432.0 |
| 2. | Returns | 4.2 | 8.5 | 12.7 | 17.0 |
| 3. | Net Sales Shipments | 103.8 | 207.5 | 312.3 | 415.0 |
| | Cost-of-Sales | | | | |
| 4. | Material | 9.0 | 18.0 | 27.0 | 36.0 |
| 5. | Direct Labor | 21.2 | 41.3 | 61.6 | 81.0 |
| 6. | Burden (232%) | 49.2 | 95.8 | 142.8 | 187.9 |
| 7. | Gross Cost-of-Sales | 79.4 | 155.1 | 231.4 | 304.9 |
| 8. | Cost-of-Sales Returns | 2.8 | 5.7 | 8.6 | 11.4 |
| 9. | Net Cost-of-Sales | 76.6 | 149.4 | 222.8 | 293.5 |
| 10. | Factory Profit (3-9) | 27.2 | 58.1 | 89.5 | 121.5 |
| 11. | Gen., Adm. & Sell. | 28.3 | 36.4 | 42.4 | 49.0 |
| 12. | Operating Profit (10-11) | ( 1.1) | 21.7 | 47.1 | 72.5 |
| 13. | Over(under) Absorbed Burden | (26.5) | ( 7.5) | .0 | 19.4 |
| 14. | Net Operating Profit (12+13) | (27.6) | 14.2 | 47.1 | 81.9 |
| 15. | Profit on Sales (14÷3) | (26.6)% | 6.8% | 15.0% | 19.7% |
| 16. | Inventory-4 Turns (3 x L7) | 238.2 | 465.3 | 694.2 | 914.7 |

**EXHIBIT 4**

This approach is not only an effort to pre-determine results but a means of ascertaining where, by how much and why various components of profits were or were not attained.

## *Standard Costs*

In the above examples, the assumption was that standard costs would be computed at the 100-percent activity level using the 250-percent burden rate. This represents the potential of the plant on a full-time basis, and foretells the extra bonus in profits if the activity rate is higher, everything else being equal.

If it is thought advisable when the plant is running consistently at, say, 150 percent, whether from overtime work or an additional shift, to reduce the absorbed rate in standard costs to the going rate of 232 percent shown in the operating budget and establish prices correspondingly to produce 15 percent

EXPENSE VARIABILITY (000)

| | | 50% | 100% | 150% | 200% |
|---|---|---|---|---|---|
| 1. | Net Cost-of-Sales (line 9) | 102.9 | 156.6 | 222.4 | 273.5 |
| 2. | Gen., Adm. & Sell. (line 11) | 28.3 | 36.4 | 42.4 | 49.0 |
| 3. | Total Costs | 131.2 | 193.0 | 264.8 | 322.5 |
| 4. | Direct % of 193 | 96.5 | 193.0 | 289.5 | 386.0 |
| 5. | Gain (Loss) (4-3) | (34.7) | .0 | 24.7 | 63.5 |

**EXHIBIT 5**

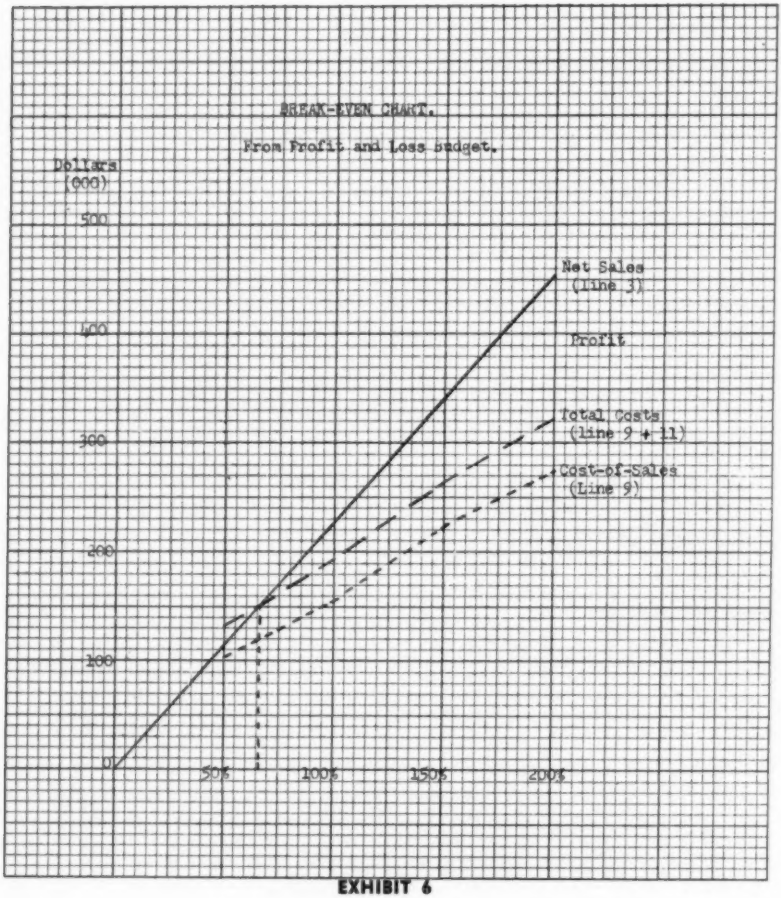



**EXHIBIT 6**

profit on sales at that level, then the figures affected in the profit and loss budget (fixed burden) should be adjusted accordingly (Exhibit 4).

This will change results considerably and show how dangerous this can be if activity fell off suddenly. Price changes, particularly on the up side, are not flexible enough to protect profits when a drop in business occurs.

### Break-Even

Break-even charts based on mathematical formulas and estimated fixed expenses are apt to be quite theoretical. Profit and loss budgets, using actual burden, show just what proportion of costs are not flexible. Taking the cost at the 100-percent level as the base, the expense variability can be computed as on Exhibit 5.

If activity dropped from 100 percent to 50 percent, then profits are seriously decreased by the rigidity of certain costs, totalling $34,700. Conversely, this rigidity results in a considerable gain as activity is increased.

It is apparent from the above budgets that the break-even point will be somewhere between the 50-percent and 100-percent level as profits stand at (17.7) and 34 respectively. Mathematically, the zero point would be at the 67-percent level with sales at $154,000 per month. By merely plotting the values in the budget, this point becomes established and also the extra profits at the higher levels are recorded. This is brought out in the chart shown on Exhibit 6.

### Summary

Management is very often uncertain of the effect of volume on results. The above data will help to guide them by showing what the theoretical potentials are. Also, where results do not come up to expectations, it is possible to determine for them where and why deviations occurred. A profit and loss budget established on the above principles, when compared with actual results, makes for a better understanding of what is occurring or can occur.

# Increase in Volume to Offset Price Reduction — A Comment

by GERALD CROWNINGSHIELD*

Discussing the problem of determining the additional sales volume needed to offset a reduction in selling price in the March, 1960 issue of the *N.A.A. Bulletin* (James D. Willson, "Practical Applications of Cost-Volume-Profit Analysis"), Mr. Willson wrote (pp. 12-13):

> ". . . assume that the company has a sales volume of $10,500,000, with fixed expenses of $1,300,000, and a marginal income ratio of .38. With a 10 percent reduction in selling prices, what sales volume is needed just to maintain present operating results? Our initial step is to calculate the present operating income as follows:
>
> | | |
> |---|---|
> | Marginal income | $10,500,000 × .38 |
> | | 3,990,000 |
> | Deduct fixed expense | 1,300,000 |
> | Present operating income | $ 2,690,000 |
>
> Next, we must adjust to the changed marginal income ratio (or the variable cost ratio).
>
> $$\text{Sales volume to offset reduced selling price} = 1 - \left( \frac{\text{Present variable cost ratio}}{1 - \text{Proposed \% reduction in selling price}} \right)$$
>
> $$= \frac{\text{Desired profit + Fixed expense}}{1 - \left( \frac{.62}{1 - .10} \right)} = \frac{\$2,690,000 + \$1,300,000}{.3112} = \frac{\$3,990.000}{.3112} = \$12,821,000$$
>
> The required sales volume of $12,821,000 represents an increase of about 22 percent over the present level . . ."

The statement that the required sales volume "represents an increase of about 22 percent over the present level" is misleading. If the sales department increases sales by 22 percent, the operating net income will be lower, as the following calculations show.

A decrease of 10 percent in the selling price will cause the marginal ratio to drop to 28 percent of the new selling price. Applying this new ratio to the new sales volume, we find that the net income decreases:

| | *Present Volume* | *Proposed Volume* |
|---|---|---|
| Sales | $10,500,000 | $12,821,000 |
| Marginal ratio | 38% | 28% |
| Marginal income | $ 3,990,000 | $ 3,589,880 |
| Fixed expenses | 1,300,000 | 1,300,000 |
| Operating income | $ 2,690,000 | $ 2.289,880 |
| Decrease in operating income | | $ 400,120 |

The sales department should be told that if prices are decreased 10 percent, the sales volume must be increased by about 36 percent, a percentage that can be obtained without the use of formulas as complex as the one presented by Mr. Willson.

* Associate Professor of Accounting, Rider College, Trenton, New Jersey.

If the selling price decreases (or if variable costs increase), the marginal income decreases. Additional units must be sold to make up the difference. The additional units that must be sold represent the volume increase required to offset the change in selling price or variable cost.

The percentage of increase in volume that is needed can be found by dividing the decrease in margin by the new margin that will exist after the change. Using Mr. Willson's data and assuming that the present selling price is $1.00 per unit (this price was selected for convenience; any other assumed price would work out as well), we have the following calculations:

| | |
|---|---|
| Margin per unit at present selling price | $.38 |
| Margin per unit under proposed selling price | .28 |
| Decrease in margin per unit | $.10 |

Percentage of increase in sales volume to offset reduction in selling price:

$$\frac{\text{Decrease in unit margin}}{\text{New unit margin}} = \frac{\$.10}{\$.28} = 36\%$$

The new sales volume required to maintain the present operating income can be found by dividing the present marginal income by the new marginal ratio:

$$\frac{\$3,990,000}{.28} = \$14,250,000$$

Or, Mr. Willson's sales increase of $12,821,000 could be converted into sales dollars at the new selling price:

$$\frac{\$12,821,000}{.90} = \$14,246,000$$

Either way, the percentage of increase is about 36 percent:

| | |
|---|---|
| Volume needed after price decrease | $14,250,000 |
| Present volume | 10,500,000 |
| Required increase | $ 3,750,000 |

Percentage of increased required:

$$\frac{\$3,750,000}{\$10,500,000} = 36\%$$

In his calculations, Mr. Willson failed to allow for the price change and expressed his new sales volume in terms of the old selling price, thereby understating the increase in volume that would be required.

# Why Be Without Budgetary Control?

by CARL J. LARSON*

THERE ARE still many skeptical business managers who have failed to install budgetary control, in spite of the fact that its use has become a common business practice. It is the tool for providing additional profits by utilizing the process of analysis and advance planning.

Several reasons have been stated for not installing budgetary control. It has been said that additional personnel required to staff such a function is an unnecessary addition to administrative overhead expense. It has also been said that additional profits cannot be positively attributed to budgetary control. Still another reason has been expressed to the effect that business conditions change so frequently that a budget soon becomes out of date and ineffective.

Nevertheless, every business, regardless of its size, needs a budget to coordinate effort along the most profitable channels. It is the only systematic, organized means for increasing profits, or for protecting them when they would otherwise decrease, or for preventing losses. The accomplishment of this result is possible because the key to successful operations lies in the analysis and advance planning by all department heads before a budget is finally approved.

Advance planning effectively overcomes the difficulties in maintaining communications among the management group—a problem that is inherent in large businesses. Experience indicates that as businesses increase in size communications tend to become less effective—effectiveness decreases as the chain of delegated authority lengthens. Neither is the advantage of close personal contact in the small business a substitute for intensive study of past operations, what should be done in the future, and how best to do it. Until they have become accustomed to the practice, most executives find the task of studying past operations to be quite onerous. Decisions are procrastinated until they are forced by the pressure of day-to-day operations. The profits that result from such uncoordinated decisions are smaller than they otherwise would be, because decisions made on a departmental basis and independently of other phases of the business may not be conducive to operational efficiency.

Budgeting instills the habit of analysis and advance planning. Knowing that his plans will be reduced to writing, and that he will be held responsible for their execution, an executive soon perceives the advantages of thorough operations studies and advance

*Monsanto Chemical Company, St. Louis, Missouri.

planning. Actively participating in the budget procedure, each executive becomes thoroughly familiar with the over-all objectives and policies, as well as fully cognizant of what is expected of him. Decisions can then be expected to flow smoothly, according to the plan.

The budget studies and reviews that are conducted on all the management levels provide an opportunity, not otherwise available, to secure the best suggestions and counsel from the entire group. The final budget, expressive of the combined judgment, has also the advantages of objectivity and impartiality.

While the primary purpose of a budget is to coordinate everyone's efforts along the most profitable lines, it also serves as an effective tool for management's use in controlling operations. For every item of income and expenditure, periodic comparative reports are issued for the purpose of measuring performance in terms of the budget. The unfavorable variances indicated by such reports signal problem situations that need corrective action. Corrective action can be taken before significant loss occurs. On the other hand, if unfavorable variances occur as a result of external business conditions beyond the control of management, the budget can be revised to keep it realistic and effective as a continuing tool for control of operations.

Even though first budget plans may be imperfect, it should be recognized that they are the foundation for better plans. Budgeting has come of age. It will do the job for which it is intended, if given a fair chance.

# Beyond These Covers

*Books*

### Practical Cost Accounting for Banks

*Marshall C. Corns, Bankers Publishing Co., 39 Beach Street, Boston 11, Mass., 1959, 210 pp., $18.75.*

The topic of this book is one which has been gradually (over the past 10 years and earlier) given extended emphasis, i.e., the application of cost classification and unit cost development (of functions and services). The cost summary illustrated in the final chapter discloses, for example, a unit cost of $.097 for handling commercial deposits, and this is made up of the following items: teller $.0658, proof $.0057 and bookkeeping $.0256.

### Management Accounting

*Robert N. Anthony, Richard D. Irwin, Inc., Homewood, Illinois, Second Edition, 1960, 671 pp., $10.*

In this revision, the material on principles of financial accounting has been expanded, to add to the usefulness of the text when used for beginners, and that on management accounting has been divided to recognize control and planning separately. All chapters are implemented with cases.

### Accounting: Administrative and Financial

*George R. Husband, Chilton Co., 56th and Chestnut St., Philadelphia 39, Penna., 1960, 499 pp., $7.50.*

The author of this text takes accounting seriously as a force in business operations, one which results in "less social waste of properties and services" and "an important factor in organizing and maintaining the financial strength and stability of the business enterprise". The treatment starts with the framework, process and techniques of accounting and proceeds to statement preparation and analysis and then to the many significant problems, e.g., depreciation, marketing, costs, and budgets.

### Twenty-Second Institute on Accounting

*Ohio State University, Columbus, Ohio, Paper Bound, 1960, 162 pp.*

An institute that is quite definitely an "institution" due to its long and favorable history is reported, as to its May 1960 proceedings, in this group of addresses. Financial accounting, education of accountants, research in accounting, and Federal budgeting ("The World's Biggest Balance" Sheet by Maurice Stans, Director, Bureau of the Budget) are outstanding topics.

### Accounting Guide for Defense Contracts

*Paul M. Trueger, Commerce Clearing House, 4025 West Peterson Ave., Chicago 46, Illinois, Third Edition, 1960, 574 pp., $15.*

The author's preface to this book is dated early this summer and the text covers changes in the A.S.P.R. which were worked out in late 1959, together with changes which have taken place in law and executive orders since the 1958 edition. The text is comprehensive and, as appendices, includes Section XV of the A.S.P.R. and like material.

### Management by System

*Richard F. Neuschel, McGraw-Hill Book Co., 330 West 42nd St., New York 36, N.Y., Second Edition, 1960, 359 pp., $7.95.*

An experienced business counsellor and systems man here revises the text of his original (entitled "Streamlining Business Procedures") to accommodate implications of ten years of growth in the "systems and procedures function throughout American business and government". Not by any means primarily on use of electronic equipment, this is not neglected, nor its part in facilitating integrated data processing.

### Probability Statistics for Business Decisions

*Robert Schlaifer, McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y., 1959, 732 pp., $11.50.*

The subtitle of this work, "An Introduction to Managerial Economics Under Uncertainty," gives its significance. The text, while intended to be a "nonmathematical introduction to the logical analysis of practical business problems," takes the reader well into probability theory.

### Renegotiation

*The Renegotiation Board, Washington 25, D. C., 1960, Pamphlet, 4 pp.*

This slim pamphlet, subtitled "what it is and how it works" is a brief explanation of renegotiation, extended by Congress in 1959 to 1962. The renegotiation process and reporting requirements are briefly explained.

### Electronic Business Machines

*J. H. Leveson, Editor, New York Philosophical Library, 15 East 40th St., New York 16, N. Y., 1960 (Scotland 1959), 213 pp., $15.*

First published abroad last year, this book is specific in character, dealing in its first section with the technique of programming. Subsequent sections relate computers to business data processing and to equipment applications.

### International Trade — Theory, Policy, Practice

*Kramer, d'Arlin and Roots, South-western Publishing Co., Cincinnati 27, Ohio, 1959, 678 pp., $7.50.*

A textbook in the area of sale and purchase of goods across national boundaries, one of today's ever-increasing fields of activity, this volume includes a substantial section on practical aspects of international trade.


**STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, JULY 2, 1946 AND JUNE 11, 1960 (74 Stat. 208) SHOWING THE OWNERSHIP, MANAGEMENT, AND CIRCULATION OF N.A.A. BULLETIN (Formerly N.A.C.A. Bulletin) published monthly at New York, N. Y., for October 1, 1960.**

1. The names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, National Association of Accountants, 505 Park Avenue, New York 22, N. Y.; Editor, George F. Wyman, 505 Park Avenue, New York 22, N. Y.; Managing Editor, None; Business Manager, Raymond P. Marple, 505 Park Avenue, New York 22, N. Y.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.) National Association of Accountants, 505 Park Avenue, New York 22, N. Y.; President, George A. Hewitt, 2101 Packard Bldg., Philadelphia 2, Pa.; Secretary, Arthur B. Gunnarson, 505 Park Avenue, New York 22, N. Y.; Treasurer, Casper B. Apple, 1325 National Newark Bldg., Newark, N. J.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.): None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required by the act of June 11, 1960 to be included in all statements regardless of frequency of issue.): 46,735.

R. P. MARPLE, Business Manager

Sworn to and subscribed before me this 27th day of September, 1960.

[SEAL]

ROBERT T. WATTIE
Notary Public, State of New York
Qualified in Orange County
(My commission expires March 30, 1961)

NATIONAL ASSOCIATION OF ACCOUNTANTS
NAA
1919